



THE M3 "GREASE GUN"

LEROY THOMPSON



Author

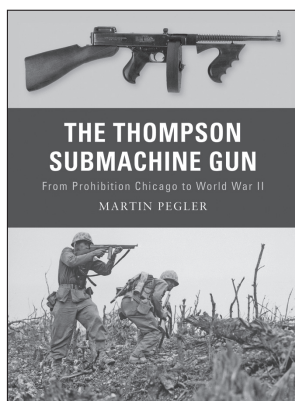
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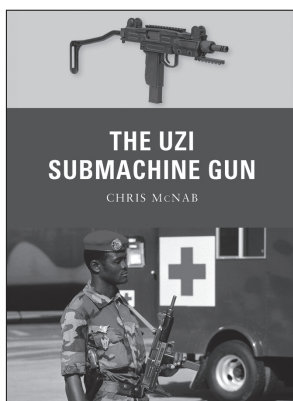
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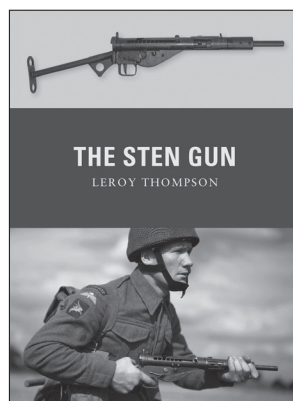
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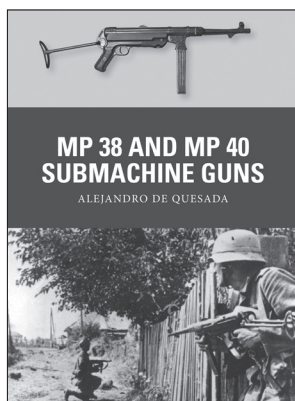
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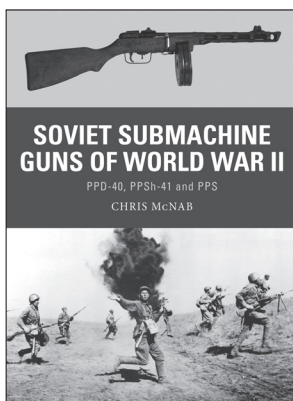
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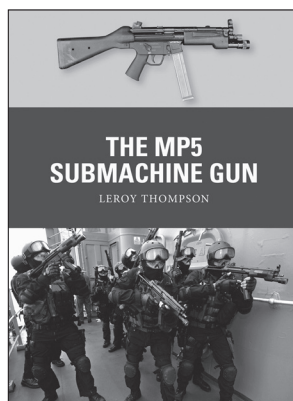
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Editor's note

In this book a mixture of metric and US customary measurements is used. For ease of comparison please use the following conversion table:

1 mile = 1.6km
1yd = 0.91m
1ft = 0.30m
1in = 2.54cm/25.4mm
1lb = 0.45kg

Cover, above: A right-side view of the M3 with stock extended and dust cover closed. The M3, a blowback design fired from an open bolt, was produced using a stamped receiver in two parts, which were welded together. The cocking handle was a relatively complicated crank device and its safety was a hinged dust cover, which could be closed to block the bolt. As in the original tests, the magazine always had some problems, since it used the same single-feed system as the British Sten. It was also extremely difficult to load without a loading tool. (Author)

Cover, below: A member of the "Cacti Raiders" in Korea is armed with an M3A1. (NARA)

Title page: A US soldier demonstrating firing the "New Army Submachine Gun" in 1943; note that he grasps the magazine housing to enhance his control. Grasping the magazine itself would increase the likelihood of malfunctions. (NARA)

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INTRODUCTION

The M3 “Grease Gun” served as the primary US submachine gun (SMG) for almost a half-century from 1943. Some have called the M3 “the US Sten,” which has some truth to it, as the M3, like the British World War II SMG, was designed for construction from stampings that could be welded together. The effectiveness of the German MP 38 and MP 40 SMGs also influenced the US desire for a more compact weapon. Both low cost and ease of production were important factors in the development of the M3, as at the time the United States was primarily using the rather expensive and labor-intensive Thompson SMG.

During the Vietnam War, a soldier assigned to Aberdeen Proving ground demonstrates the M3A1. Based on complaints from troops in the field and requests from armorers, the M3A1 – introduced in December 1944 – would incorporate various “fixes” for the problems that affected the M3 in its first months of service. The most noteworthy was elimination of the crank cocking assembly, which often broke, and its replacement by a recessed cocking slot machined into the bolt, which allowed the finger to be used to cock the weapon. (NARA)



The M3 was developed to fulfill specific requirements. It was never intended to be a general-issue infantry weapon, but instead was for issuance to troops who would be less likely to engage in firefights at longer ranges; that said, airborne troops were issued the M3 because of its compactness and firepower. It was easy to stow when jumping and gave the paratrooper the ability to fire a lot of man-stopping .45 ACP rounds when storming an enemy position. Although the M1A1 Paratroop Carbine was available and offered more range, many troops felt that the M3 provided more stopping power. The M3 was most useful for armored crews who had limited space within a tank, giving them not only an effective weapon for fighting off infantry attacking their mount, but also one that could be stowed and quickly retrieved when needed. Truck-drivers also were issued the M3 in considerable numbers for similar reasons. Officers often were issued the M3 since it took the same cartridge as their M1911 semiautomatic pistols but offered greater range and firepower. It was also used by troops who were not normally exposed to front-line combat; for example, Military Police (MPs) found that the M3 was useful when guarding prisoners or providing security for headquarters or supply depots. Simply put, the M3 was the weapon best suited for troops who did not need a powerful and long-ranged weapon such as the M1 Garand rifle, but, instead, needed a close-combat weapon that could be readily carried without interfering with their other duties.

M3s were still in use with US armored crewmen into the late 1980s and saw some use during the First Gulf War (Operation *Desert Storm*) in 1991. Mostly, though, M3s were standard with M60 tanks and not with the later M1 Abrams. During the Korean and Vietnam wars, US reconnaissance troops and special-operations forces were sometimes armed with the M3, including suppressed versions. US Marine Corps (USMC) Recons carried the M3 at one time, and it was the first SMG issued to the US counterterrorist unit Delta Force.

In some ways the greatest influence of the M3 was that it served its purpose well enough that the United States did not feel compelled to adopt a replacement for a half-century. Additionally, the M3 would prove the continued viability of the .45 ACP round for use in SMGs. A foreign version of the M3 was produced in Argentina in 9×19mm caliber and saw action during the Falklands War in 1982. Another copy, the Type 36, was made by the People's Republic of China and used against US forces during the Korean War. Various South American countries have used M3s received from the United States, as have Greece, Japan, the Philippines, Macedonia, Morocco, and South Korea. Even the Soviet Union received some as Lend-Lease equipment during World War II.



The M3A1 would prove popular with US Marine Corps (USMC) reconnaissance troops during the Vietnam War, as it was compact yet gave them a lot of firepower to break an ambush. Note that these Recons have made improvised head coverings from camouflage helmet covers. (USMC)



DEVELOPMENT

A functional, cost-effective SMG

REPLACING THE THOMPSON SMG

Based to a large extent on characteristics considered desirable by the Infantry and Cavalry branches of the US Army, a requirement was issued by the Small Arms Development Branch of the US Ordnance Corps Technical Branch on February 6, 1941 for a new SMG design, emphasizing that simplicity of production was a primary goal. Other requirements included all-metal construction, easy disassembly, “cost and performance equal to the British Sten Gun” – a benchmark weapon that was already in production and in service – and chambering for the .45 ACP round that was easily convertible to 9mm chambering, which would make the new SMG useful if airdropped to Resistance forces or used by Office of Strategic Services (OSS) agents in Occupied Europe (Hobart 1973: 42).

The Project Officer for the new SMG was Colonel René Studler, who brought George Hyde and Frederick Sampson together for the project. In

These US ski troops of the Fifth Army in Italy during 1944 carry a mixture of Thompsons and Grease Guns. Upon entering World War II, the United States had one standard SMG, the Thompson, which had been adopted in 1938, though the weapon had seen previous use with the USMC during the “Banana Wars” in Central America and the Caribbean, and elsewhere. Two versions of the Thompson were acquired for US military use: the M1928A1 and the M1/M1A1, the latter a simplified version. Even the M1 version of the Thompson required substantial machining, however, and was labor intensive and expensive to produce. As a result, the US Ordnance Corps expressed an interest in simplified designs using stampings, as with the German MP 40 or the even simpler British Sten. (Tom Laemlein / Armor Plate Press)



charge of designing the new SMG was George Hyde, a prolific firearms designer experienced in SMG development long before he was assigned to create what would become the M3 SMG, while Frederick Sampson, the Chief Engineer of the Inland Division of General Motors Corporation, was in charge of production planning (Nelson 1977: 94).

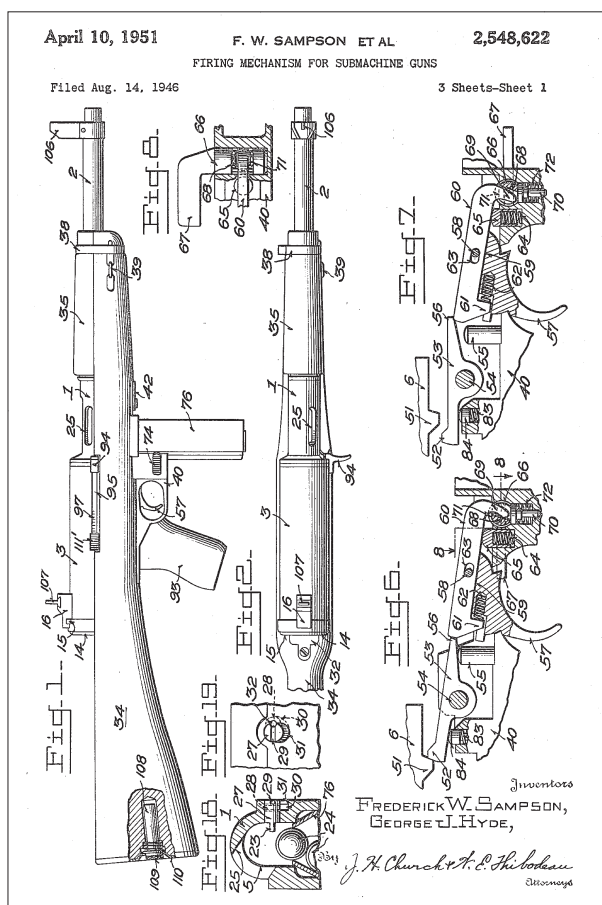
The Hyde Model 35/Model 109 and the Atmed

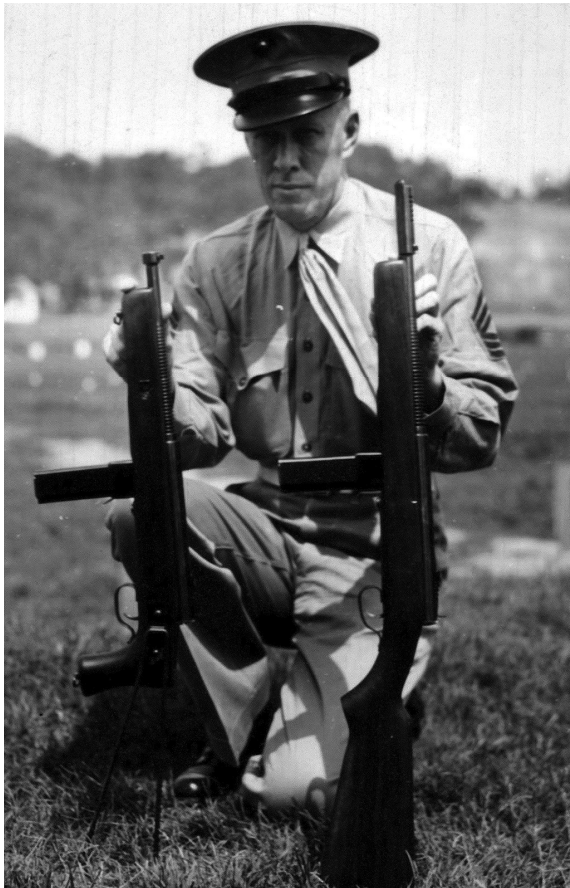
George Hyde (born Heide in Germany in 1888) came to the United States in 1926 and began working for Griffin & Howe, a New York sporting-goods company known for building custom M1903 Springfield sporting rifles. While working for Griffin & Howe, he continued his firearms design work and, between 1926 and 1939, designed various SMGs. These included the Model 35, which bore some external resemblance to the M1921 Thompson due to its finned barrel and wooden forearm with a slanted vertical grip. However, the Model 35 used a tubular receiver with a milled end cap that incorporated a cocking plunger/handle, as was the case with Hyde's previous design, the Model 33. Magazine capacity was 20 rounds of .45 ACP.

Hyde managed to secure a military test for the Model 35 at Aberdeen Proving Ground, Maryland, in October–November 1939, where it was tested as the Hyde Model 109. Although its performance was considered better than the Thompson under adverse conditions and its simplicity, handling, and lower recoil were lauded, the rear cocking handle that protruded toward the shooter's eye was disconcerting to those firing the weapon. Other criticisms concerned the amount of muzzle flash and the weakly supported foregrip. As a result, the Hyde Model 109 did not receive a service trial (Hobart 1973: 38).

Undaunted, Hyde continued working on his SMG design with the Atmed Manufacturing Company of New York. In September 1942, the Hyde-Atmed was tested at Aberdeen Proving Ground, where it fared poorly due to the fixed firing-pin piercing primers, and because when set on semiautomatic it would often fire multiple rounds due to a weak sear spring. Shortening the firing pin by just .0009in cured the problem of pierced primers. Although the Hyde-Atmed did well in mud and dust testing, it was not deemed worthy of further development.

Patent drawing for the Model 109. The Hyde Model 35 was a blowback design, fired from an open bolt, and chambered the .45 ACP cartridge. It was a select-fire weapon, which could be fired on semi- or full-automatic. It fed from a 20-round box magazine, and George Hyde designed the magazines so that they could be joined together side-by-side to facilitate a fast change by removing one magazine and moving the next one into position. It also had a threaded compensator (Hobart 1973: 38). Many later SMGs, such as the Heckler & Koch MP5, would incorporate linked magazines for the same purpose. Note also that the M3 would incorporate the tubular receiver. (US Patent Office)





The folding-stock Reising Model 55 (left) and fixed-stock Reising Model 50 (right) are demonstrated at Quantico, Virginia, in 1942. There were four USMC contracts between February and October 1942 for Reising SMGs totaling 46,500 Model 50s and 33,500 Model 55s. According to Iannamico, there was a 3,000-unit overrun on the final contract, but it is not clear if those went to the USMC or not. There were also orders from abroad for the Reising: in 1941, Russia had ordered 6,000 and Britain 2,000 M50 SMGs (Iannamico 2004: 166). When the Reising proved unsatisfactory for use in combat by the USMC, it was issued to the US Navy and US Coast Guard. (Tom Laemlein / Armor Plate Press)

The Reising

Hyde would continue to work on SMG designs, but as war grew ever more likely in the Pacific, the USMC was anxious for a weapon to supplement stocks of the Thompson SMG. The best choice at the time seemed to be the Reising Model 50 SMG, which the Ordnance Department first tested in July 1941. Initially, the Reising performed well in trials with the US Cavalry and US Tank Corps. As a result, the USMC began its own testing of the weapon in August 1941. Typically, SMGs of the time fired from an open bolt, but the Reising fired from a closed bolt, which allowed use of a lighter bolt and thus helped keep the weapon's weight down. Reportedly, the Reising showed good accuracy on semiautomatic fire. On the negative side, however, the Reising's light weight and .45 ACP chambering contributed to muzzle climb when firing on full-automatic; and later, during combat usage in the Pacific, the closed-bolt feature contributed to the weapon's lack of reliability, as dirt getting into the receiver recess into which the bolt locked kept the bolt from fully locking.

Additionally, the oil used with the Reising allowed dirt to be retained, thus compounding the problem (Iannamico 2004: 158).

Other problems included a 20-round double-column magazine that merged into a single-feed design, and its easily bent feed lips, which adversely affected reliability. A single-column 12-round magazine was developed that was more reliable, but this limited the weapon's effectiveness, as an SMG was usually chosen for its firepower. Interchangeability of parts was also a problem, resulting in spares having to be altered to fit in the field. Yet another problem was the sliding selector switch on the right side of the receiver that required the finger to be removed from the trigger and which was small enough that operation could be difficult with sweaty hands – always a problem in jungle fighting in the Pacific (Iannamico 2004: 158–60).

Nevertheless, the Marines needed SMGs, and so the Model 50 fixed-stock and Model 55 folding-stock Reising were recommended for military adoption in 1942, with Harrington & Richardson signing the first contract with the Department of the Navy on February 26, 1942. That first order was for 2,000 of the Model 55 folding-stock Reising, presumably for Paramarines, Raiders, and armored crews (Iannamico 2004: 163). In fact, Harrington & Richardson had begun production of the M50 in 1940 in expectations of police and military contracts. As a

result, the first Reising's supplied to the USMC were from that early "commercial" production. Changes would later be incorporated to speed production and to address USMC concerns.

During World War II, 114,216 Reising SMGs were produced with about two-thirds going to the USMC, US Navy, and US Coast Guard. Initially, the Marines authorized approximately 500 Reising's per infantry regiment. The Reising saw a lot of combat use on Guadalcanal, where many of its deficiencies became apparent. Although it continued in use until the M1 Carbine became available, by late 1943, the Reising was withdrawn from use by the Fleet Marine Force (FMF) and was only issued in the United States for guard duty and for ship-based Marine detachments. Some Reising's were also used by the OSS or supplied to Resistance groups.

The UD M42

The UD M42 SMG, which would be less complicated and less expensive to produce, was developed as a possible replacement for the Thompson SMG. The United Defense Supply Corporation was formed to carry out weapons development during World War II but did not actually manufacture the weapons developed. In the case of the UD M42, two experienced US manufacturers – High Standard Firearms and Marlin Firearms – actually produced the new SMG.

The UD M42 was relatively simple, employing a blowback, select-fire action. Although initially intended to fire either the 9mm Parabellum or .45 ACP cartridge, only a small number (reportedly six) were produced in .45 ACP as prototypes. The UD M42 was adopted in 1942 but was quickly classified as substitute standard once the M3 was widely available. Though intended to be simpler to produce than the Thompson, it was

The UD M42 SMG was relatively heavy at 10lb, but with an overall length of just 32.3in it was relatively handy. Its magazine held 25 rounds of 9mm Parabellum ammunition, but firepower was increased by using two magazines welded together so that a magazine change could be made by removing the combination and turning it upside down. Although the rate of fire was 700rds/min, the combination of the fixed stock and vertical foregrip made this SMG more controllable on full-automatic than many other SMGs of the time. (Author)



actually labor intensive as it used machined parts only. The sheet-metal magazines also proved unreliable, having a tendency to warp and to accumulate mud, dirt, sand, or other debris. The primary use of the UD M42 was by the OSS to supply Resistance forces. It saw use among Italian, French, and Greek resistance fighters, as well as with Chinese and Filipino guerrillas. It proved particularly popular in the Philippines and continued in use there for years after World War II.

The Hyde-Inland/M2

George Hyde's association with the Inland Division of General Motors would prove productive for both parties, and Hyde's further development of his Model 35 resulted in the .45-caliber Hyde-Inland SMG. A major change was repositioning the cocking handle from the back of the Model 35's receiver to a more conventional position on the right side of the new SMG. The Hyde-Inland looked much less like the Thompson because the foregrip was removed, as were the barrel fins. Also, the barrel was enclosed by the stock, which extended forward to cover the barrel until within a few inches of the muzzle. The stock was given a straighter pull with less drop at the shoulder. The Hyde-Inland received a serious test at Aberdeen Proving Ground during April 2–15, 1942. It fired a total of 6,080 rounds with only 20 malfunctions and was considered more accurate in full-automatic fire than the Thompson and with less muzzle climb. This was attributed at least in part to the Hyde-Inland's lower cyclic rate – 527rds/min as opposed to 775rds/min for the M1 Thompson or 610rds/min for the M1928 Thompson (Hobart 1973: 41). In terms of accuracy, at a range of 50yd the Hyde-Inland scored 99 of 100 shots on a 6ft×6ft target, while the M1 Thompson scored 50 and the M1928A1 Thompson scored 49 (Nelson 1977: 90).

Improvements were made to the design based on these tests, with five improved models being provided for additional testing in June 1942. There were only two malfunctions during a 2,640-round test. The need for weapons production early in World War II resulted in the rapid adoption of the Hyde-Inland after the magazine well was deepened so that Thompson magazines could be used. Also, to improve reliability a heavier recoil spring was fitted to give greater forward impetus. With these improvements, the design was approved as the "US Sub-machine Gun .45 M2" in April 1942. It is interesting to note that the Hyde-Inland was approved prior to the final testing in June 1942. The need to increase US arms production rapidly probably explains this fast-tracking (Nelson 1977: 90–91).

General Motors' Inland Division was busy producing the US M1 Carbine, so another manufacturer was sought. Marlin Firearms Corporation of New Haven, Connecticut, which had been producing the UD M42, had the facilities and capacity to produce the M2, and so in June 1942 the company was given a US purchase order for 164,500 M2 SMGs. Originally, it was intended that some critical M2 components would be produced using the powder metallurgy process, which entailed blending finely powdered materials, pressing them into a desired shape, then heat-

treating the material to bond it. However, it was discovered that these parts did not maintain their tolerances and impact strength was low. Therefore, it proved necessary to machine parts from bar stock. During an April 1943 test of M2 production, Springfield Armory found problems with misfires, failures to feed, and guns “running away” on full-automatic fire. Springfield engineers visited Marlin Firearms and implemented production changes. Production models of the M2 finally reached Aberdeen Proving Ground for testing in May 1943. However, the decision to produce the M3 SMG resulted in the M2 being declared obsolete on June 18, 1943 (Hobart 1973: 41). According to Nelson, fewer than 400 M2 SMGs were actually produced (Nelson 1977: 91).

TOWARD THE M3

George Hyde would also be one of the designers on the M3 project, but before that, he would become involved in the design of the FP-45 Liberator Pistol that would be produced by the Guide Lamp Division of General Motors. By October 1942, production of the Liberator was complete, so Hyde could concentrate on the new SMG designed to meet US Ordnance Corps specifications. Most of the specifications for the new SMG came from the Infantry Branch and the Cavalry Branch, and envisioned an air-cooled weapon weighing 7–11lb (the Infantry put an upper limit of 10lb). The Infantry specified an overall length of 36in and of 23in with stock folded, while the Cavalry specified 34in but did not state a maximum length with stock folded. The weapon was to have a pistol grip and a sling, a caliber of .30 or .45, and a 20–50-round magazine capacity, with the Infantry wanting 50 and the Cavalry 20 and 50. It was to be capable of semi- or full-automatic fire, with a rate of fire of 500–600rds/min; a maximum effective range of 300yd was specified by the Infantry. Additional requirements added by Aberdeen Proving Ground included a heavy bolt to keep the cyclic rate under 500rds/min; and when fired standing, the weapon had to be capable of putting 90 percent of rounds fired on full-automatic on a 6ft×6ft target at 50yd. Also, it was to be capable of a magazine change with the bolt either open or closed (Iannamico 1999: 22–23).

A soldier firing an M3 at Camp Hood, Texas, during a weapons demonstration on January 4, 1944. The T20 underwent rigorous testing by various branches, including Airborne Command and the Amphibious Warfare Board, Infantry Board, and Armored Forces Board. During the Amphibious Warfare Board tests, the T20 was fired at silhouette targets ashore from a landing craft, then dropped in the surf and picked up and fired again. It was found that sand getting into the magazine increased the likelihood of the follower sticking. Airborne Command found that 12 T20s could be packaged for airdropping by parachute inside a standard A5 aerial-delivery container. Firing by Airborne Command testers revealed failures to feed due to jamming of the magazine follower (Iannamico 1999: 36). (NARA)



Evaluation and testing

A wide range of SMGs and machine pistols were evaluated during the early stages of the search for a new SMG, with the M1928A1 Thompson used as a benchmark. Examples of the German MP 35 and MP 40 were also evaluated by way of comparison. Alongside those SMGs already mentioned above, the weapons evaluated for possible adoption included: the Smith & Wesson Model 40 (1939), a 9mm design, some of which were sold to the UK; the Star (1940), interesting because it had two settings for the cyclic rate: 300rds/min and 700rds/min; the Suomi (1940), the excellent but heavy and complex to manufacture Finnish SMG proven in the Russo-Finnish Winter War of 1939–40; the Thompson T2 (1942), a new weapon from the Auto Ordnance Corporation that proved unreliable; the Woodhull (1942), which was deemed too complicated for mass production; the Sten Mk III (1943); the Austen Mk I, the Australian version of the Sten; the Owen (1943), the Australian replacement for the Austen; the Olsen (1943), a weapon with a very high cyclic rate of 1,000rds/min that had various problems; and a Colt M1911 modified as a machine pistol (Iannamico 1999: 24–31). For the most part, these weapons did not prove satisfactory for military usage due to a lack of reliability in mud or other adverse conditions, or were deemed too complicated for ease of large-scale assembly-line manufacture. Most also proved difficult to control in full-automatic fire due to high cyclic rates. As a result, the Ordnance Department began working directly with the Inland Division of General Motors to develop a design that met their criteria. This process would eventually result in the adoption of the M3.

The original design of what would become the M3 SMG was designated the T15. However, the model that was actually tested, the T20, was simplified even further by making it a full-automatic weapon rather than a select-fire weapon as originally conceived. By November 1942, five prototypes were available and were tested at Aberdeen Proving Ground during November 18–24. They performed very well. During a 5,000-round endurance test using ammunition with brass cases, there were only two malfunctions, both attributed to the magazine follower sticking. An additional 500 rounds of steel-cased ammunition were fired, during which there were three failures to eject and one failure to feed. Another 5,000 rounds were fired to test the M3 when converted to fire 9mm ammunition; there were 23 failures to eject due to the ejection port being too small. After the port was enlarged, an additional 1,250 rounds were fired with no failures (Nelson 1977: 95). Accuracy in full-automatic fire was deemed superior to that of any similar weapons previously tested. This was attributed to the weapon's low cyclic rate of fire – 400rds/min. In mud and dust trials, the T20 also proved superior to other SMG designs previously tested.

During testing, the Infantry Board supervised the firing of 3,014 rounds. Seven tests were also carried out as follows: (1) timed assembly and disassembly; (2) ten shots per target were fired at ten targets for accuracy; (3) 300 rounds per target were fired in bursts of 3–5 rounds; (4) 200 rounds per target were fired in bursts of five to ten rounds; (5) five silhouette targets were engaged with the shooter getting off as many rounds as possible within 25 seconds; (6) dust test; (7) mud test. Problems



were encountered with failures to eject, and the Infantry Board also specified that the magazine needed to be improved, but this was not done despite the fact that all other branches testing the T20 had experienced the same problem (Iannamico 1999: 36).

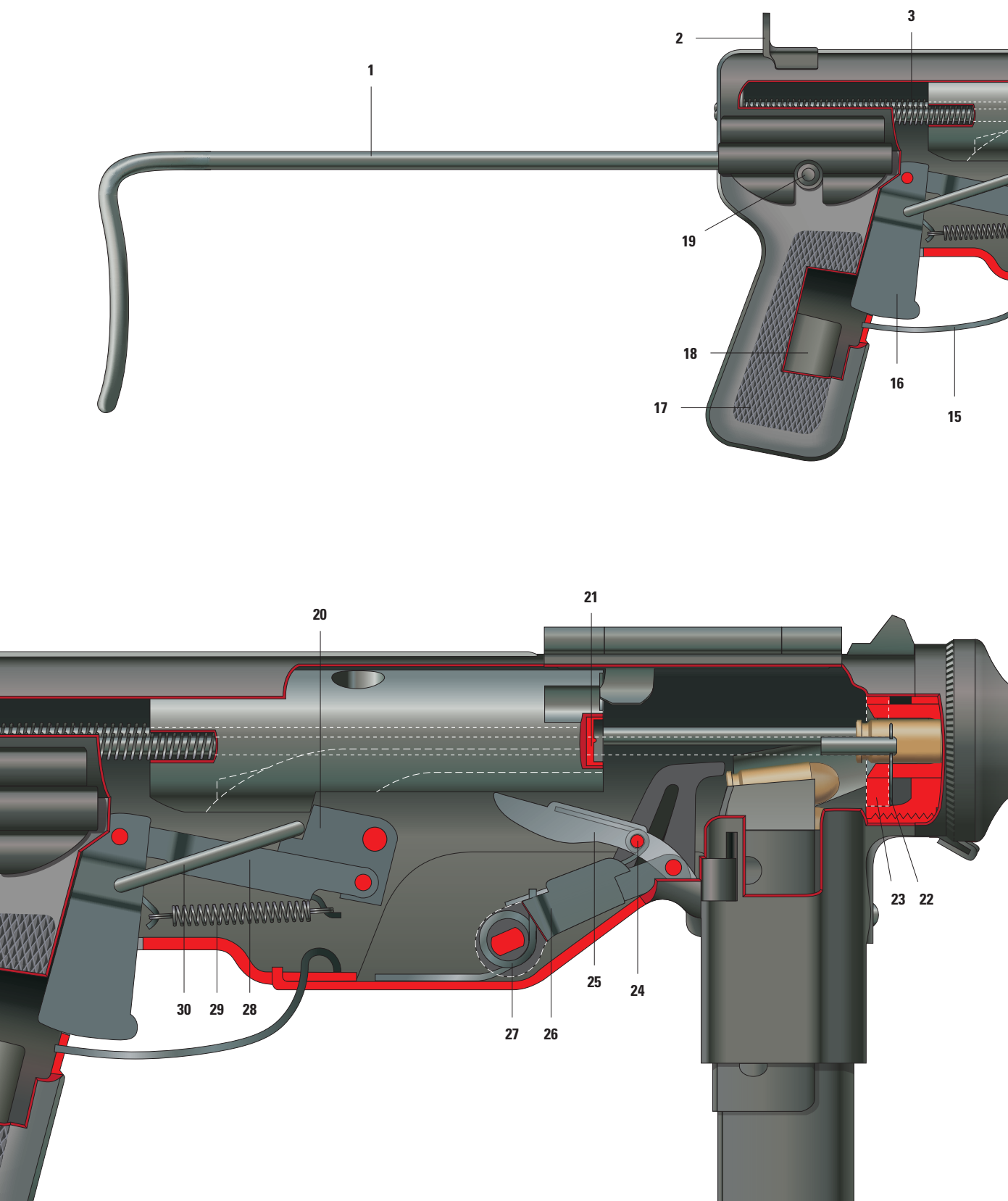
On December 24, 1942, the Ordnance Board recommended standardization of the T20 as the “Submachine Gun Cal. .45, M3.” (Note that this standardization came only two months after the project was authorized – a good indication of just how badly a new SMG was desired by the various branches of the US armed forces.) Upon standardization of the T20 as the M3, the M1 and M2 SMGs were declared limited standard until sufficient M3s were available. However, the M3 never completely replaced the M1 Thompson during World War II (Hobart 1973: 42).

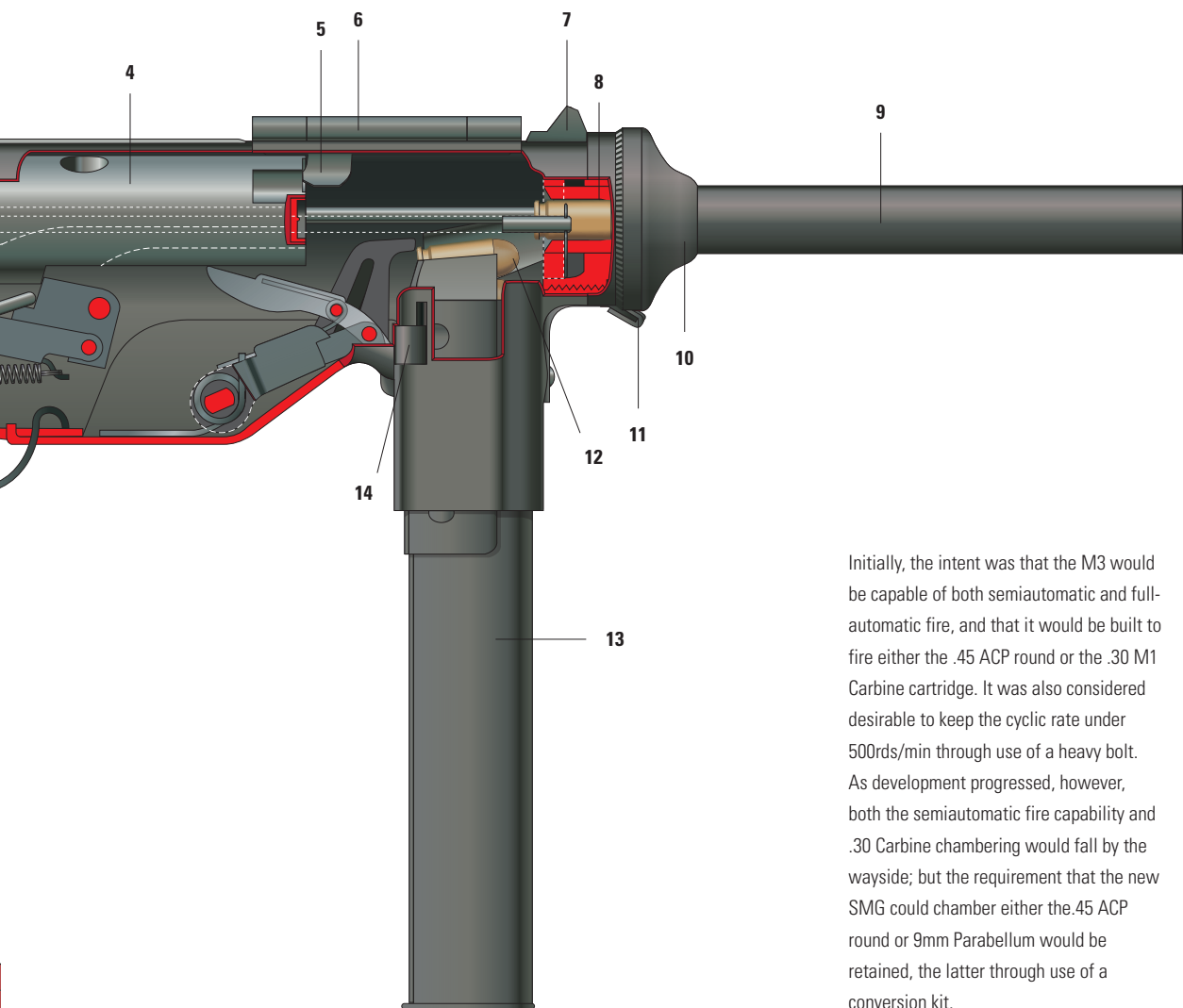
Into production

It had been decided early in the development of the T15/T20 that the Guide Lamp Division of General Motors would produce the weapon because it had extensive experience in the use of stampings. Guide Lamp also made a production study of the British Sten to incorporate any applicable manufacturing shortcuts into the American SMG (Nelson 1977: 95). An initial order for 300,000 M3 SMGs was given to Guide Lamp on January 29, 1943 (Hobart 1973: 42), with stampings used to a large extent in the manufacturing process. Only the barrel, bolt, and a few smaller parts required machining. Critical metals (i.e. chromium, tungsten, etc.) were not required to produce the M3, and production-line techniques were designed to cut time and cost. For example, the barrel was produced by swaging (altering dimensions by forcing an item into dies), this being a faster and less expensive method than machining. Additional cost savings were made by eliminating sling swivels and a selector switch (Nelson 1977: 97).

An Ordnance Department photograph of the M3 with stock extended and dust cover/safety closed. During the various tests of the T20, the only noted cause of malfunctions was the sticking of the magazine follower. The Armored Forces Board found the T20 to be better than any other SMG for use by tank crews as an auxiliary weapon. Its compact size with stock collapsed was viewed especially favorably, as this allowed it to be readily stowed within a tank (Nelson 1977: 96). Another change specified by those testing the T20 was that its sliding stock should be lengthened to approximate the length of pull – the distance from the middle of the trigger to the rear of the buttstock – of a service rifle. (NARA)

Submachine Gun Cal. .45, M3





Initially, the intent was that the M3 would be capable of both semiautomatic and full-automatic fire, and that it would be built to fire either the .45 ACP round or the .30 M1 Carbine cartridge. It was also considered desirable to keep the cyclic rate under 500rds/min through use of a heavy bolt. As development progressed, however, both the semiautomatic fire capability and .30 Carbine chambering would fall by the wayside; but the requirement that the new SMG could chamber either the .45 ACP round or 9mm Parabellum would be retained, the latter through use of a conversion kit.

1. Stock
2. Rear sight
3. Guide rods
4. Bolt
5. Safety lock
6. Cover assembly
7. Front sight
8. Chamber
9. Barrel
10. Barrel collar

11. Ratchet pad
12. Bullet
13. Magazine assembly
14. Magazine catch
15. Trigger guard
16. Trigger
17. Pistol grip
18. Oil can
19. Stock catch
20. Sear

21. Firing pin
22. Guide rod retaining clip
23. Guide rod locating plate
24. Retracting lever pawl spring
25. Retracting lever pawl
26. Retracting lever
27. Retracting lever spring
28. Connector
29. Trigger spring
30. Trigger pin

As of 1943, Guide Lamp – which was located in Anderson, Indiana – comprised 18 buildings with over 500,000 square feet of floor space for production purposes. Despite the large amount of floor space available, by the end of 1943, Guide Lamp was operating at peak production with 38 percent of space devoted to the production of headlamps of various types, 29 percent to cartridge cases, 17 percent to .50-caliber barrels, and 16 percent to the manufacture of the M3 SMG (Iannamico 2004: 198). Initially, the Guide Lamp contract price for each M3 was \$17.92 less the bolt assembly. Later, the price was upped to \$18.36 per SMG to cover the cost of production changes and packaging and shipping the weapons. The Buffalo Arms Company of New York was subcontracted for the bolt assemblies at \$2.58 each, with completed bolts shipped to Guide Lamp for assembly. The cost of producing an M3 was almost half that of an M1A1 Thompson SMG, and production time was also about half that of the same weapon (Iannamico 2004: 199).

M3 receivers were fabricated as two .06in-thick sheet-metal halves that were then welded together. Problems were initially encountered in accurately welding the two halves and with warping of the thin sheet-metal from heat during the welding process (Iannamico 2004: 200). M3 barrels were produced by the cold swaging process. This entailed reaming the steel-tubing barrel blanks to the correct inside diameter, after which a rifled mandrel would be inserted and the tube would be compressed as it was forced through the die. Once rifled, the 40in tube would be cut into five 8in M3 barrels. This was faster and less expensive than other methods and still gave accuracy within Army Ordnance requirements (Iannamico 2004: 200). SMG historian Thomas B. Nelson makes an interesting point about the importance of the M3 from the production point of view:

The simple design of the M3 submachine gun lends itself readily to mass production, and to ease of assembly and disassembly. In functioning, the weapon is superior to most other existing types. At the time the M3 was introduced, it represented an entirely new concept of weapon design in the American small arms ordnance system. The development of the M3 represented a major “break through” in production methods within the ordnance system, and the mere fact that the weapon was successful shows this type of weapon has its place in our small arms system. (Nelson 1977: 97)

Overcoming the assumption that the methods used to manufacture the M3 resulted in a “cheap” weapon was not easy, however, as when it began issuance many troops expressed the desire to have the Thompson instead. The cylindrical receiver and the barrel that protruded from the center and were secured by a knurled cap at the front of the receiver did, indeed, resemble a grease gun. At least “Grease Gun” was a somewhat macho name; it was also sometimes called the “Cake Decorator.”

In addition to simplifying the actual production process, simplification in design also cut costs and production time. For example, the M3 was not equipped with sling swivels for affixing a sling; and by making it full-automatic only, there was no need for a selector switch. The low cyclic rate of the M3 made the lack of a selector switch acceptable, as troops

soon learned to use finger control to fire only one or two shots. Combining functions in a component saved labor and costs as well. To this end, instead of a safety lever the M3 used a dust cover that could be closed over the ejection port to lock the bolt in either the forward or rearward position. Likewise, a stud on the dust cover entered a hole in the bolt when it was forward to lock it in position, but when the bolt was in the rear position, the stud blocked the bolt.

The M3's bolt contained a fixed firing pin inside, and longitudinal holes were drilled in the bolt to support a pair of parallel guide rods that mounted twin recoil springs. This system allowed greater tolerances to enable the M3 to continue firing even when dust, sand, or other matter entered the action. The guide rods also aided in reliability. A spring-loaded extractor was mounted inside the bolt head, while the ejector was located inside the trigger group. The M3's telescoping wire stock could be pulled rearward and locked for firing or pushed forward and locked for stowage. A relatively complicated cocking handle – the assembly required no fewer than nine separate parts – was located on the right side of the receiver. Pulling the handle to the rear caused a pawl to rise and engage a notch at the bottom of the bolt, thus pushing the bolt to the rear until it encountered the sear and locked in position.

Once the two parts of the M3 receiver were welded together, the finished receiver was sandblasted, then either a gray-green phosphate finish or Du-lite Type III black-oxide finish was applied (Iannamico 2004: 202). Final assembly and quality-control testing then took place. M3 30-round magazines were manufactured by various subcontractors and finished with a matte blue finish.

An M3 SMG with the dust cover open and the bolt forward; if a loaded magazine were in place, this would still be an unsafe weapon as the bolt could be jarred to the rear, loading a round and beginning to fire on full-automatic. Note the circular depression at the rear of the bolt into which the safety tab will go when the dust cover is closed. (Author)



A close-up of markings on the left side of an M3 along with the magazine-release button; note the surrounding guard to keep the button from being depressed inadvertently, and the oiler in its carrier on the receiver. (Author)



Snags and fixes

Some difficulties were encountered when it came to getting M3 production started. For example, in preproduction models, problems were encountered with the ejection of spent cases. A slight change in the ejector-port size combined with a change in how far the extractor protruded soon solved this problem (Nelson 1977: 97). As a result, the first M3s produced by Guide Lamp came off the lines in May 1943. Based on the original production schedule, 20,000 SMGs should have been produced by July 1943, but in reality only 900 had been completed and passed inspection by that date. Because of the shortfall, the Ordnance Department gave Auto Ordnance a new contract for Thompson SMGs. Once the M3



Close-up of the M3's cocking handle, the assembly for which proved to be prone to breakage in combat. Also visible are the collar holding the barrel in place and the dust cover containing the safety. (Author)

Grease Gun ammunition

50. Classification of Ammunition.

Contents of original ammunition boxes or containers can be identified by markings on the box. These markings indicate the number of cartridges in the container, caliber, type, code symbol, and lot number. Types, uses, and means of identification of ammunition used in submachinegun are:

- a. *Cartridge, Caliber .45, Ball, M1911.* Used against personnel and light materiel targets. The ball bullet consists of a metal jacket surrounding a lead alloy core. The bullet tip is unpainted.
- b. *Cartridge, Caliber .45, Blank, M9.* Used to simulate fire and for salutes. This cartridge can be fired single shot only. It can be identified by the absence of a bullet and by its tapered mouth.
- c. *Cartridge, Caliber .45, Dummy, M1931.* Used for training personnel in the operation of loading and unloading the submachinegun, and for testing weapons. This cartridge can be identified by the empty primer pocket and two holes in the cartridge case.
- d. *Cartridge, Caliber .45, Tracer, M26.* Used for observation of fire. Secondary uses are for incendiary effect and for signaling. The bullet consists of three parts: a copper-plated or gliding metal-clad steel jacket, a slug of lead hardened with antimony, and a tracer mixture in the rear portion of the jacket. The bullet is painted red for a distance of approximately $\frac{3}{16}$ inch from the tip.

e. *Cartridge, Caliber .45, High Density Shot, XM261.* Used against personnel. It employs 16 spheres encased in a sabot similar in shape to the ball bullet. (US Army 1974: 42)



ABOVE A pair of M3 magazines, the top one being loaded with the separate loading tool, and the bottom one being loaded with the tool built into the wire stock. (John Miller)

production difficulties had been resolved, 85,130 examples were delivered before the end of 1943. Production would rise to a high of 343,372 in 1944, followed by 178,192 in 1945 prior to the cessation of production (Iannamico 2004: 202).

According to Iannamico, the first problems encountered by troops armed with the M3 occurred in February 1944, when cocking-handle assemblies failed. Those troops already in Britain training for the Normandy invasion encountered similar problems. The reason for the failures was that the cocking handle's retracting pawl was cracking near the point where it was riveted to the base. It was determined that the part had become brittle and likely to break due to the choice of a type of steel that did not respond well to the heat treatment. The problem was fixed by using a different metal and increasing the width of the metal at the rivet hole, and all M3s already on issue were upgraded by unit armorers (Iannamico 2004: 202–03).

While working on the problem with the cocking handle, engineers discovered that the cocking handle itself could be eliminated and a simpler method used to cock the bolt. (This will be discussed further when covering the M3A1.) It was also discovered that retracting-lever springs were breaking or becoming distorted. Engineers determined that the cause was the spring coming out of its slot during disassembly or reassembly of the M3. Also corrected was the tendency of the lever pawl to spring forward during removal of the housing from the receiver, the solution being the



The M3's rear peep sight. The rear sight had shown itself to be prone to damage in the field; therefore, it was strengthened – as shown here – by adding gussets (plates or brackets for strengthening an angle). M3s manufactured after March 1944 incorporated all of these changes (Iannamico 2004: 203–04). (Author)

A close-up of the M3's post front sight. Sights were rudimentary, consisting of a rear aperture theoretically regulated for 100yd, and a front post. In actuality, M3s were test-fired for accuracy at 100ft. The sights should still have been relatively close to on, as sights zeroed for 100yd will be relatively close at 25yd. (Author)



addition of a stop on the right-hand brace of the retracting-lever assembly. Yet another change incorporated a cocking lever trip in the ejector with a long tab that projected 90 degrees to the left of the rear slope of the ejector. Problems in removing the barrel during disassembly arose because the barrel-ratchet pad was wearing quickly, making it difficult to depress during barrel removal. This problem was solved by increasing the size of the ratchet pad and making a change to its heat treatment.

Another problem arose due to the need to “soldier proof” the M3. Soldiers were using the wire stock as a cleaning rod, which was causing

wear on the bolt face when cleaned from the muzzle and on the chamber when cleaned from the chamber end of the barrel. Welding a plate between the two stock rods acted as a barrel stop to prevent the rod entering too far. Troops also found that the magazine-release button could be hit inadvertently, dumping the magazine. A small sheet-metal guard, held in place by the magazine-release catch spring, was installed around the magazine catch, thus virtually eliminating this problem.

These changes were approved by the Ordnance Committee on August 31, 1944 for inclusion in future M3 production (Iannamico 2004: 204–05). In May 1944, the Tank Destroyer Board had also requested some changes, most of which were covered by those discussed above, though there were a couple of others, including a method of attaching the M3 with stock folded to the soldier's belt, and a detachable firing pin (Iannamico 1999: 61–62).

The Ordnance Department set strict standards for quality control on the M3 production line. For example, barrels had to withstand the firing of one high-pressure proof round. Functioning tests were carried out to check reliability and to ensure that the cyclic rate did not exceed 450rds/min. Random samples were subjected to a 5,000-round endurance test. Accuracy was tested by firing five shots at 100ft, with four of the shots required to hit within or on the edge of the bull's-eye. Additionally, visual inspections were carried out of the markings on the weapon and the overall standard of workmanship (Iannamico 1999: 54).

TOWARD THE M3A1

Beginning in April 1944, the Ordnance Department began working with Guide Lamp to simplify the M3, as well as to make it easier to operate and maintain. To this end, six M3E1 SMGs were produced by modifying the M3. Among the modifications were the elimination of the retracting-handle assembly, retracting-lever assembly, and retracting-lever

spring. Also eliminated was the clip for the oiler on the left side of the receiver. To replace the cocking lever, a slot was cut in the top of the bolt at the front, which allowed the finger to be placed into the slot to cock the bolt. To allow more ready removal of the bolt, an ejector groove, extending the full length of the bolt, was added to the bottom. The retracting pawl notch was no longer needed and was eliminated. Also, a clearance slot was added for the rivets of the cover hinge (Nelson 1977: 101).

Other changes included the extension of the ejection port and the cover assembly, thus allowing the bolt to be drawn back far enough to engage the sear. Owing to the lengthening of the ejection-port cover, the safety stud was moved farther to the rear of the cover. When the ejection-port cover was closed with the bolt forward, the stud locked the bolt in that position. In addition to making the weapon safe when carried with the safety stud engaged, this method could also be used to lock down the bolt when the barrel was removed for shipping or to make the weapon more compact for stowage. When the safety was engaged with the bolt in the rear position, it cammed the bolt off of the sear, making it and the trigger inoperative.

Attempts were made on the M3E1 to make parts perform multiple functions if possible. An example of this involved the new oiler located in the pistol grip, which allowed an oilcan with greater capacity to be carried. In the case of the oiler, the stylus on the oiler cap could be used as a drift to remove the extractor pin. Another example, to aid in removing the barrel, saw the barrel ratchet modified so that it could be depressed further to disengage more readily from the barrel cover (Nelson 1977: 101).

Another problem frequently mentioned by troops was the difficulty they experienced when depressing the magazine spring to load the M3 magazine fully. In response, a bracket, which could be used as a loading tool, was welded toward the rear of the stock. This bracket also acted as a stop when the wire stock was used as a cleaning rod. To enable the stock to be more effective when used as a cleaning rod, the forward end of one

A view of the M3A1's bolt cocked. Note the finger slot used for cocking the M3A1; note also the safety stud on the dust cover (longer than that of the M3) that fits into the depression in the bolt. Although the M3's cocking handle was not a moving part, it did stick out and could catch. Adoption of the M3A1, which did away with the cocking handle, gave US airborne and armored troops a weapon without projecting parts, especially moving ones, and thus a weapon that could readily be stowed in a tank or tank destroyer or tucked into the webbed gear of paratroopers. The M3A1 was also slightly lighter than the M3, at 7.95lb versus 8.15lb, presumably because of the elimination of the cocking-handle assembly. (C&S)



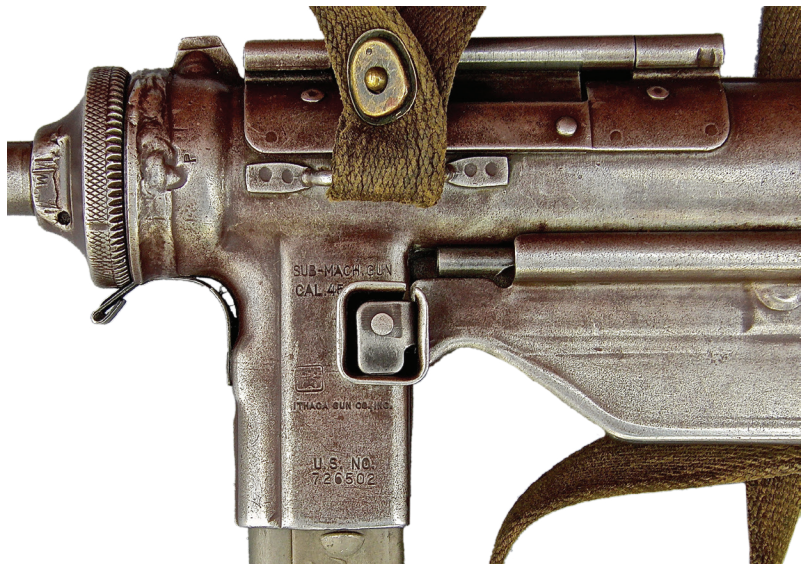
The M3A1 with the bolt closed; note the depression in the bolt to allow the safety to lock it in the forward position. The cost of the M3A1 was lower than that for the M3. According to Hobart, as of October 1943, the cost to the US Government per M3 was \$33.33 (though that figure probably included spare parts), while in April 1945, the cost of the M3A1 without spares was \$21.00, rising to \$22.00 by June 1945 (Hobart 1973: 46). (C&S)

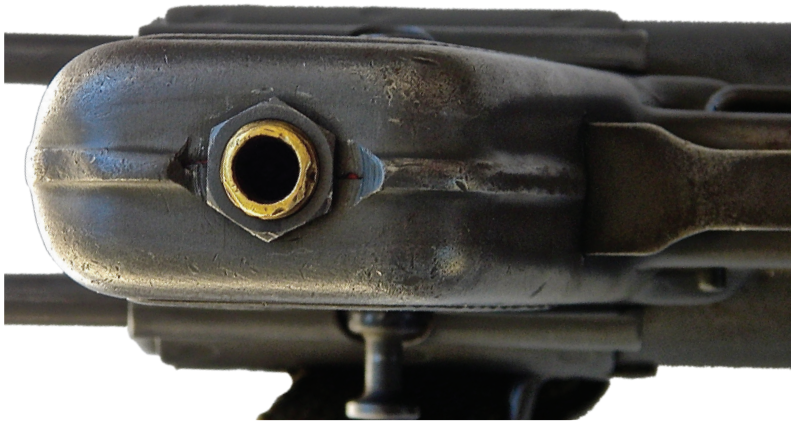


stock tube was drilled and tapped to take a bore-cleaning brush. Another use for the stock was as a wrench for two flats cut into the barrel collar to unscrew a tight barrel assembly. Because of the aforementioned problems with rear-sight fragility, its sides were strengthened (Nelson 1977: 101–02).

Problems had been endemic with the M3 magazine, especially the follower, and dust and dirt getting into the magazine made things worse. To fix this problem, in May 1944 Inland began working on a plastic dust cover designed to fit tightly over the top of the magazine. The resulting cover was made of Tenite, a thermoplastic originally developed by Eastman Kodak in 1929, and its latch was designed to fit into the recess for the magazine catch. Hitting the edge of the magazine cover against the open edge of the weapon's ejection port or another sharp edge allowed the cover to be quickly removed.

A close-up of the markings on an M3A1 SMG produced by the Ithaca Gun Company. Production of the M3A1 during World War II was much lower than that for the M3: 15,469 M3A1s against 606,694 M3s. However, during the Korean War, an order for 70,000 M3A1s was placed with Ithaca, though only 33,200 were completed before the contract was canceled (Hobart 1973: 46). Note that Iannamico states the order was not placed until 1955 (Iannamico 2002). (C&S)





A close-up of the oiler incorporated into the pistol grip of the M3A1 SMG. The tip of the oilcan was designed to protrude from the bottom of the pistol grip, and a threaded cap with a rubber-cap seal kept the oil from leaking out. The cap for this oiler was the same as that used on the M1 Carbine's oiler (Iannamico 1999: 71). (C&S)

After proving itself in mud, dust, heat, and other tests, the cover was designated "T2" and adopted in November 1944 (Nelson 1977: 103–04).

Two of the M3E1 prototypes were supplied to the Infantry Board at Fort Benning, Georgia, with another two going to Aberdeen Proving Ground. Although no formal testing procedure was deemed necessary, the prototypes were fired enough to determine that the various changes had not adversely affected their reliability and accuracy. The changes were deemed an improvement on the original design, and in December 1944, the weapon was adopted as the "Gun, Submachine, Caliber .45, M3A1." At this point, the M3 was classified as limited standard and, in April 1945, authorization was given to withdraw the Thompsons from service (Nelson 1977: 102). However, according to Iannamico, Thompsons remained in service until 1957, as there were not enough M3/M3A1 SMGs to meet requirements (Iannamico 1999: 67).

Some experiments were carried out mounting an infrared night-vision illuminator on the M3 and using it in conjunction with early night-vision goggles or an infrared sniper 'scope. The small size of the M3/M3A1 combined with the heavy and bulky infrared equipment of the day made "night fighting" versions of the M3 poorly balanced and impractical. The experiments were carried out at Fort Belvoir, Virginia, at that time the home of the Corps of Engineers, during 1946. (NARA)

MODIFICATIONS

During the Korean War, extensive wear to the sear and sear surface of some M3 bolts was encountered. After testing, it was determined that many bolts had been improperly heat treated when manufactured. As a result, it was decided that all M3 bolts were to be heat treated again by Springfield Armory, and that these re-hardened bolts were to be used in all M3s on issue. Modified sears were also acquired to replace worn sears.

A good idea of the parts that generally required overhaul can be gained from looking at the Springfield Armory reports of weapons overhauled in the year following the end of World War II. For example, in 1945, 36,420 M3 bolts were overhauled at \$2.30 each (Brophy 1991: 369). In 1946, 4,324 bolts were overhauled at \$19.11 each (Brophy 1991: 373). (No explanation is given for the large difference in cost per bolt between 1945 and 1946.) In 1947, no bolts were overhauled, but 5,353 Nut, Oiler, 1,759 Oiler, Assemb., and 1,998 Spring, Cover were overhauled at a total cost of \$3,084.14 (Brophy 1991: 375). During 1948, various small parts were replaced





Close-up of the M9 Flash Hider for the Grease Gun; the "LFC" stands for Landers, Ferry, and Clark, a firm known to many US collectors for producing World War I trench knives. (John Miller)

during overhaul of M3s and M3A1s at a total cost of \$13,677.45. By far the most common part requiring replacement was the Shield, Mag Catch, 18,700 of which were replaced at \$0.23 each (Brophy 1991: 379). The last year for which tallies for Springfield Armory overhauls of M3/M3A1 SMGs were consulted was 1948. Presumably, the Armory spent substantial time during the 1950s re-hardening bolts as discussed above.

In March 1945, the Headquarters of Army Ground Forces recommended that a conical flash hider should be designed for the M3 and M3A1. The result was the T34 flash hider, which attached to the muzzle of the M3/M3A1 using a wingnut clamp. Testing at the Ordnance Research Center showed that it virtually eliminated the flash when firing on full-automatic. Only a small number of T34 flash hidens – designated the "Hider, Flash, M3." when actually adopted for service – were produced during World War II, but further production was undertaken for use during the Korean War (Iannamico 1999: 132).

An interesting experimental version of the M3 may have been inspired by the German *Krummlauf* curved-barrel version of the StG 44 assault rifle. As the M3 was a standard-issue weapon for armored troops and tanks were always in danger of close assaults by infantry, an experimental version was developed with a curved barrel that would allow the M3 to be fired from within the tank at attackers attempting to board or get close. One version was designed to fit into a T22 periscope housing and could transverse 360 degrees as well as 40 degrees of elevation and depression. This "deflector" mechanism was tested on an M4 medium tank in 1945, but was not adopted. A modified version was built and tested at Aberdeen Proving Ground mounted on M4A3, M26, and M46 tanks, but was still not adopted. One other curved-barrel version of the M3 was tested for use by infantrymen to enable a soldier to fire from a foxhole, through a window, or around a corner without exposing himself. This version replaced the standard M3 barrel with a longer barrel that had a 30-degree curve. It, too, was not adopted (Iannamico 1999: 144).



During June 1956, a soldier of the 77th Tank Battalion (3rd Armored Division) fires an M3A1 equipped with a flash hider on the range at Grafenwöhr, West Germany. (NARA)



USE

Skepticism then acceptance

FIELDING THE GREASE GUN

Issuance

Although the M3 did not really begin to reach troops in large numbers until 1944, a May 7, 1943 Table of Organization and Equipment (T/O&E) for a Towed Tank Destroyer Battalion shows that it was anticipated that the M3 would replace all other personal weapons with



An African-American soldier, part of the crew of an M4 tank, with his M3 Grease Gun; he is almost certainly a member of the 761st Tank Battalion, which arrived in France in October 1944 and served as part of Patton's Third US Army. (NARA)



Qualification badge for the SMG; in this case the pistol qualification badge is included as well. These were the two primary weapons of tankers late in World War II and for years after. (Alamo Military Collectibles)

the exception of a small number of M1911 pistols and M1 Carbines; altogether, the T/O&E lists three .45 pistols, 128 M3 SMGs, and 17 M1 Carbines (T/O&E 18-36). Based on a September 1, 1944 T/O&E for the same type of unit, the majority of M3s were still issued to the Headquarters and Headquarters Company, which was authorized three M1911 pistols, 11 M1 Garand rifles, and 151 M3 SMGs. By comparison, each Tank Destroyer Gun Company, which would likely see more front-line combat, had only 49 M3 SMGs, but 120 M1 Carbines and 24 M1 Garand rifles (T/O&E 18-35).

A quick look at the number of M3 SMGs versus other weapons authorized by T/O&E for other units is also instructive. For example, the November 11, 1944 T/O&E for a Light Tank Company authorized 70 M3 SMGs and 24 M1 Carbines (T/O&E 17-17). One other unit worth considering is an Armored Field Artillery Battalion, based on its T/O&E of November 22, 1944. The battalion was authorized five M1911 pistols, 114 M3 SMGs, and 391 M1 Carbines (T/O&E 6-165). Presumably, the much higher proportion of carbines presupposes the need to engage at longer ranges to protect the guns.

When issuance of the M3 began late in 1943, its appearance did not impress the troops who received it. Used to the machined M1 Garand rifle, M1 Carbine, or Thompson SMG, they found that the stamped M3 appeared “cheap.” However, initial disparagement of the M3 would change among many troops who were issued the weapon as they learned to appreciate its lightness and compactness. They also found that it was very reliable – often more so than the Thompson.

Combat experience did reveal that certain parts on the M3 were more likely to break than others, and maintenance manuals listed the following parts as most likely to fail: barrel ratchet, extractor, ejector, magazine catch, cover spring and cover, and retracting mechanism. Spares of the following parts, which were considered likely to be lost or to fail in the field, were issued along with the M3 in a canvas parts bag: guide-rod clip, washer, guard, trigger, magazine catch, shield magazine catch, extractor, sear, and spring. The elimination of the cocking-handle mechanism in the M3A1 negated the need for some of these parts; those considered most likely to break on the M3A1 were the same as for the M3, with the omission of the retracting mechanism (Iannamico 1999: 134–36).

Training

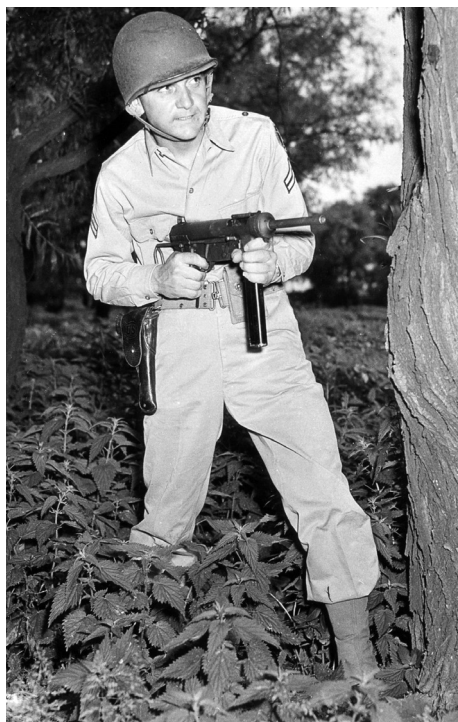
Training with the M3 was similar to the training troops were given with the Thompson SMG. A total of 50 hours were devoted to training with the M3, broken down as follows: five hours of familiarization with mechanical operation of the weapon; 13 hours of preparatory marksmanship training in use of sights, trigger pull, etc.; nine hours of instruction and firing on a dismounted practice course followed by three hours of shooting for record and qualification on this course; eight hours of instruction on engaging moving ground targets; and 12 hours of vehicular firing (Iannamico 1999: 82). Presumably, the vehicular firing portion of the training was geared to armored crewmen, MPs, and transport personnel who would be issued the

OPPOSITE The accuracy of the M3 is demonstrated by this continuous burst fired at 12yd; note how two rounds are high and right due to muzzle climb. (Author)

M3. It would have also been useful for other troops armed with the M3, as the compact weapon would have been much quicker to deploy when traveling in vehicles. Trainees who had previously qualified with an SMG, such as the Thompson, had the number of hours of instruction reduced to focus solely on use of the M3.

During marksmanship training, a total of 255 rounds were fired from standing, kneeling, and prone positions as part of the qualification course. To qualify Expert required a score of 180, Sharpshooter a score of 160, and Marksman a score of 140. Trainees may also have been taught the assault position (from under the arm against the chest) and the seated position during some training. The Korean War-era training film *Infantry Weapons and Their Effects* offers some insight into the training given with the M3. Based on the instructions shown in the film, trainees were taught to first cock the bolt of the M3, then apply the safety by closing the dust cover to lock the bolt back. Then, the loaded magazine was inserted. The film also shows trainees learning trigger control to fire short bursts for better control of the weapon.

Based on manual FM 23-41 Submachineguns Caliber .45 M3 and M3A1 (1974), training was designed to instruct troops in deployment of the M3 in dismounted reconnaissance of a roadblock, on outpost duty, and by mounted scouts and armored vehicle personnel in assumed ambush situations. Troops were also trained to use the M3 in what would later be called Military Operations in Urban Terrain (MOUT) (US Army 1974: 55). Troops were taught the use of leads with the M3 when engaging moving targets. To apply a lead for a moving target, the length of the target (TL) as it appears to the firer was used as a unit of measure. This eliminated the need for corrections due to the angle at which the target crossed the line of sight as the more acute the angle, the shorter the target would appear, and the less lateral speed it would attain. Troops were taught that at 90m (98yd) or less, a target moving at 10mph would require a lead of $\frac{1}{3}$ TL, at 20mph $\frac{2}{3}$ TL, etc. (US Army 1974: 58). Although this field manual was the 1974 version, it was an update of previous M3 manuals dating back to 1957, and so it may be presumed that many of the same basic techniques were taught during World War II.



ABOVE A soldier at Fort Myer, Virginia, demonstrates firing the M3 from the hip; the official photograph caption states that after 49,600 rounds of test-firing with a single weapon, its accuracy improved rather than decreased. (NARA)



The stock of the M3A1 removed so that it can be used as a cleaning tool. Note the cleaning brush affixed; note also the loading tool built into the stock. Below is the separate loading tool that was used with the M3. (John Miller)



Maintenance

Also interesting from FM 23-41 are the primary causes listed for stoppages with the M3:

Stoppage	Cause	How to reduce
Failure to feed	Dirty or dented magazine	Replace magazine.
	Weak or broken magazine spring	Replace magazine.
	Worn magazine notch	Replace magazine.
	Corroded ammunition	Replace ammunition.
	Worn or broken magazine catch	Replace magazine catch.
	Dirty chamber	Clean chamber.
Failure to chamber	Obstruction in chamber	Remove obstruction.
	Weak driving springs	Replace driving springs.
Failure to fire	Defective ammunition	Replace ammunition.
	Defective firing pin	Replace bolt.*
	Weak driving springs	Replace driving springs.
Failure to extract	Broken extractor	Replace extractor.
Failure to eject	Broken ejector	Replace ejector.*
	Broken or missing extractor	Replace extractor.
Failure to cock	Worn sear	Replace sear.*
	Worn sear notch	Replace bolt.*
	Bent guide rods	Straighten.

*These items are not carried as a unit repair parts [sic]. (US Army 1974: 35)

FM 23-41 also explains the proper drill to deal with a stoppage:

36. Immediate Action.

a. As the first step in reducing a stoppage, remove the magazine, retract the bolt, and inspect the chamber to insure that it does not contain a live cartridge, or any other obstruction. If there is no obstruction, close the cover, replace the magazine, open the cover, and attempt to fire. If the gun still does not fire, check to see whether a live cartridge has chambered;



if it has not, remove the magazine and insert a new magazine.

b. If there is a live cartridge or other obstruction lodged in the chamber, cock the gun and hold the cover down firmly; remove the barrel; then clear the chamber by using the stock to push the obstruction out of the barrel. Under combat conditions, when time is short, omit the step of removing the barrel. (US Army 1974: 35)

An Ordnance Department poster showing the proper technique for field-stripping the M3 SMG. (NARA)



An M3A1 with the housing and bolt assembly removed. (C&S)



Loading and firing the “Grease Gun”

Since the M3 would normally be carried with the stock collapsed for convenience, if engagement were imminent the first step would be to depress the button on the receiver that retains the stock in the forward position. It would then be pulled to the rear and locked in place (1). On the M3, the crank handle would then be pulled to the rear until the bolt locked in the open position (2); note that this was the firing position as the M3 fired from an open bolt. If the M3A1 was being used, instead of pulling back the cocking lever, it was necessary to insert a finger into the slot in the bolt to pull the bolt back (3). This took more effort than when using the M3's crank handle.

Next, a loaded magazine was inserted into the magazine well,

then pushed in until it locked in place (4). The finger had to be kept well away from the trigger, as the weapon would fire continuously if the bolt went forward on a loaded magazine. With this in mind, the muzzle had to be kept pointing in a safe direction. The cover assembly was then closed and pushed into position to lock the bolt to the rear (5). The safety was now applied.

This method of loading and making safe was taught in training and would be a relatively safe way of preparing the M3 for carrying in combat. However, there was an alternative method of carrying the M3 with the bolt forward, the chamber empty, and a loaded magazine in place. In this case, the cover assembly could be closed and pushed into position to lock the bolt forward. A loaded magazine could then be inserted; however, to allow the

INTO COMBAT IN WORLD WAR II

Airborne troops

Reportedly, the first combat use of the M3 was by US Army Rangers and members of the 82nd and 101st Airborne divisions during the June 1944 invasion of Normandy (Canfield 1994: 145). Airborne troops had been considered possible users of the M3 during its development because they could jump with the weapon fully assembled, or disassemble it to form an even more compact package. Jack Agnew of the 101st Airborne Division saw one advantage of the compact M3 SMG for the Normandy drop:

With invasion imminent, Jack Agnew, Headquarters Company, 506th PIR, 101st Airborne, was in a quandary. “We were supposed to store



magazine to be pushed fully into the magazine well and locked it could not be fully loaded. If the M3 or M3A1 was carried in this manner, prior to firing, it was necessary to open the cover/safety, then pull the cocking lever to the rear. The SMG was then ready to fire or the cover/safety could be pushed into position to lock the bolt to the rear.

To make ready for firing the cover assembly was opened and pushed out of the way (6). When preparing to fire the M3, the stock had to be pushed tightly against the shoulder while the shooter leaned into the weapon. The support hand grasped the front of the magazine well. The target was acquired by looking through the rear sight and aligning it with the front sight. The trigger could then be

pulled and held back to fire a burst of the desired duration (7). Because the M3 fired on full-automatic only, the only way to control the rate of fire was with the trigger finger.

When it was necessary to change the M3's magazine, it was grasped with the support hand, while the magazine-release button was pressed with the thumb, allowing the magazine to pull free (8). Note that the release button was positioned for a right-handed shooter. The M3 had a reputation for being dropped or for the cover assembly to catch and come open, thus removing the safety. A jarring could then start the weapon firing, which would continue until the magazine ran dry. As a result, great care had to be taken when carrying the M3 with a magazine in place.

our rifle in a bag," he said, "which we would open after we hit the ground and got out of our 'Mae West' lifejackets. The rifle was in three pieces, which had to be put back together and loaded before we could fire back at the enemy. I knew a little bit about shooting and wanted no part of having to go through all this, so I managed to get hold of an M3 submachine gun." (Whitlock 2011: 106)

Agnew is obviously referring to the jump bag that was designed to take a disassembled M1 Garand rifle or a fixed-stock M1 Carbine. Because of its compact size, the M3 could easily be tucked into his parachute harness to allow Agnew to engage an enemy during the final portion of the descent or when he landed. It is not clear if Agnew still jumped with his M1 Garand, though it would have been prudent to have it to hand for longer-



range combat. Whether the M3 helped Agnew on D-Day isn't clear, but he went on to survive the Operation *Market-Garden* jump in September 1944 and the rest of the war. He must have retained an interest in firearms, as after the war he became an instructor and range master for the National Rifle Association (Killblane & McNiece 2003: 93).

Although the M3 would have given airborne troops a lot of close-range firepower, it would have lacked the range to engage in extended

combat. Indeed, Miguel “Mike” Marquez – a member of “The Filthy Thirteen,” formally the 1st Demolition Section, 506th Parachute Infantry Regiment (101st Airborne Division) – threw away his Grease Gun in favor of an M1 Garand as soon as he landed during Operation *Market-Garden*, stating that the M3 was “ugly and only good for close in fighting” (quoted in Killblane & McNiece 2003: 264). Generally, the M1 Carbine’s effective range was given as 300yd, but due to bullet drop with the earlier non-adjustable sights, 200yd was more likely. Effective range for the M3 was usually considered to be 100yd, but 50yd was more realistic. The M1A1 carbine was only 25.5in long with the stock folded, while the M3 with stock collapsed was 22.8in. If carried in the M3 during a jump, the 6.5in-long, 30-round magazine would also have been more likely to snag than the 3.9in-long, 15-round M1 Carbine magazine. In any case, during the rest of World War II, the M1A1 Carbine appears to have been more popular with airborne troops, though the M3 did see some use. Actually, many airborne troops continued to use the Thompson SMG despite its greater weight and overall length. Presumably, this was because they felt its longer barrel and more solid stock allowed them to engage more effectively at longer ranges. Many paratroopers also preferred the M1 Garand rifle even though it was much harder to stow for a jump. They were willing to put up with it being cumbersome for its greater range and knockdown power.

Glider troops also made use of the Grease Gun. One glider pilot, Lieutenant Roger Krey, took part in Operation *Varsity*, the Rhine jump, in March 1945:

With a load of infantry in your glider, it is the pilots who leave last. The glider’s doors are in the rear. Pilots have to unbelt and pick up their weapons before running for those rear doors ... I was last out and went through the doorway in a flat dive, clutching my submachine gun. I hit the ground and looked around. What I saw was bad. Three or four of the airborne men had been hit. Their lieutenant and sergeant were taken out of the fight right beside the unlucky left door; neither could move. All the lieutenant could do was yell at us not to draw any more fire ...

OPPOSITE This young US paratrooper carries an M3. Sergeant Clark Archer served with the 517th Parachute Infantry Regiment during Operation *Dagoon*, the Allied invasion of Southern France, on August 15, 1944. He was ordered to set up roadblocks to interdict German movement beyond the beachhead. He recalled: “Shortly thereafter, we could see the silhouette of a vehicle approaching. The car closed to within fifty yards of our position waving their arms as if to indicate a ‘friendly.’ There was considerable reluctance to commence firing; I did not see any visible weapons. All problems ceased as the convertible slowed down just past [Private Joe] Kellogg’s position and mine: They were Germans, there was no doubt about it. I stood up and started firing my grease gun into the driver’s side door until it jammed, after firing eight or nine rounds. Then Kellogg popped up and fired a full clip from his M-1 rifle. Next, [Steve] Weirzba fired an AT [antitank] grenade from his Springfield ‘03 rifle ... We cut the other Germans down with small-arms fire” (quoted in O’Donnell 2001: 187–88). As well as giving the airborne soldiers the car, this incident delivered a briefcase containing vitally important papers detailing the German response to the invasion. (Tom Laemlein / Armor Plate Press)

Operation *Varsity*, March 1945 (overleaf)

During Operation *Varsity*, the Allied jump across the Rhine, US paratroopers of the 3rd Battalion, 507th Parachute Infantry Regiment were engaged in combat near Wessel. In this illustration, they are depicted clearing Germans from Diersfordt Castle. They encountered elements of the German 84. Infanterie-Division, which included Volkssturm units. Here, the Germans are armed with the MP 40 SMG, one of the inspirations for the development of the M3 SMG. The US paratrooper standing right is engaging with an M1 Thompson SMG. The Thompson was to be replaced by the M3, but this paratrooper obviously preferred to jump with the older weapon. The other two paratroopers are armed with M3 Grease Guns; note that the weapons still have the cocking crank handle, as the M3A1 had not yet come into service. The paratrooper on the right has ducked behind cover to change magazines.







A soldier of the 1st Battalion, 325th Glider Infantry Regiment (82nd Airborne Division), examines an abandoned German wagon during January 1945. Another airborne soldier who landed by glider during Operation *Varsity* was Jack Trovato of the 155th Airborne Antiaircraft Battalion (17th Airborne Division): "Before that day was over, I was to see many men get killed or wounded. I saw one trooper who had his cheek torn open by small arms fire. He stood there, his helmet at his feet and blood pouring down his face and body. With a boiling anger in his eyes, legs spread apart, he began pumping rounds from a grease gun into a house some 100 feet away. Within a few seconds he was blown away by small arms fire. I have no idea who he was, but I'll always remember his courage" (quoted in Hagerman 1993: 223). (NARA)

But soon the situation changed. As more of our big birds floated in, the Germans' fire seemed to get more dispersed and confused. One of the airborne men near me thought he could make it to a safer place. He shouted my way: "Lieutenant, wanna get out of here? I'll try if you cover me. Follow behind with your grease gun, and every time you see me hit the ground and roll back up, you do the same!"

"Let's go!" I yelled back ... I followed about fifteen feet behind, and we both made it to a nearby patch of woods. I never saw that airborne guy again, but I may well owe my life to him. (Quoted in Wolfe 1993: 396-97)

Infantry

Many junior officers in infantry units carried the Grease Gun. 2nd Lieutenant Earl Shostrom was a platoon leader in Company I, 358th Infantry Regiment (90th Infantry Division), during the June and July 1944 fighting in Normandy. He recalled:

On July 3, 1944, very early in the morning, our company was crossing an open field when it was ambushed. The Germans had an advantage because they had automatic weapons that sounded like a burp. That is why we called them burp guns. They really threw out the lead! My company commander was wounded so he was put out of action. It was up to me to take charge so I went forward to see what was what.



First of all, I sent runners back for more ammunition. I saw a German officer standing several hedgerows ahead of me. As I raised my .45-caliber “Grease Gun” to fire, he saw me and fired his burp gun at me. He hit me once in the knee and several more times below the knee. Lucky for me, he ran out of ammo and I fired at him and saw him grab his shoulder so I guess I hit him there.

Since I was way ahead of the rest of my company, I managed to make my way to E Company where I was treated by a medic ... I was taken out of combat twenty days after having landed on Utah Beach. (Quoted in Kramer 2010: 48)

Private First Class George Neill, a BAR (Browning Automatic Rifle) gunner in Company L, 395th Infantry Regiment (99th Infantry Division), was posted to positions on the front line near Höfen, Germany, in the closing weeks of 1944. He recalled a sobering incident involving his platoon commander during the nerve-racking days leading up to the German offensive in the Ardennes:

The next day, Lieutenant [Jackson W.] Goss came over from his CP [command post] to visit us. He brought a blunt message. “If any of you get an idea to retreat across the river, I will have a message for you.” Slapping his M3 grease gun, a light submachine gun that sprays 45-caliber bullets, he warned: “I’ll save one clip [with twenty bullets] for those of you who try to flee to the other side.” (Neill 2000: 161)

Later in the campaign, Goss – now battalion communications officer – would use his M3 to rescue a trapped patrol:

Goss asked for permission to go out and help them. At first, he was told “no.” But Goss’s persistent begging finally resulted in the permission he sought. For his role that followed, Goss was awarded

In France during July 1944, two infantrymen man a .30-caliber M1917 machine gun, one armed with an M3 SMG. Unlike the German and British armies, the US Army did not issue the SMG to rifle squads – at least not officially. Even so, many Grease Guns found their way into the hands of rifle-squad members in the closing months of World War II. Radford Carroll, a rifleman in Company E, 393rd Infantry Regiment (99th Division), was issued the Grease Gun and didn’t rate it highly: “The M3 was made of stamped sheet metal with a metal extendable stock, a very cheaply made device. It had its merits but also ... some serious defects. The two major defects were that the springs were not correctly tempered. Unless the bolt springs were stretched every so often, the gun would not function. The magazine was designed to hold 30 bullets, but if 30 bullets were loaded the magazine springs would not have enough force to lift the bullets, so I had to load only 20. Even then I had to empty the magazine every so often and stretch the springs again. Also, the .45-cal. ammunition was heavy and had a slow muzzle velocity. The bullets hit with a big impact, but they had a short range and were not very penetrating” (quoted in McManus 1998: 50–51). (NARA)



March 23, 1945: Troops of a First US Army combat patrol take advantage of a chance to sleep in a bed in a German house. They keep their weapons ready at hand, including two M3 SMGs, an M1 Garand rifle, a fighting knife in a boot, and an M1 Carbine. (NARA)

the prestigious Silver Star medal by [Major] General [Walter E.] Lauer [commanding general, 99th Infantry Division] on March 13, 1945.

Taking along with him a radio operator who carried a forty-pound Signal Corps Radio #300, Goss moved as fast as he could in the direction the patrol had taken. Just before getting to the bridge, heavy small-arms fire pinned them down. At this point, Goss decided to go on alone. He strapped the radio on his back and headed for the bridge ... Calling the OP, he gave exact locations of the patrol and the German targets. Before supporting fire arrived, however, two enemy soldiers worked their way to Goss's right flank and fired on him with automatic weapons ...

With the two Germans now firing at him, Goss wheeled around quickly and blazed away with his 45-caliber M3 grease gun, killing both of them. By this time, the barrage he called for, including smoke shells, began exploding near the targets. Despite the danger of his location, Goss remained at this position and continued to direct the barrage, enabling most of the patrol to withdraw safely. (Neill 2000: 290–91)

Garland Godby, who commanded Company E, 319th Infantry Regiment (80th Infantry Division), stated that the M3 “had such a slow cyclic rate. It was too mechanical” (quoted in McManus 1998: 51). Charles Miller of Company A, 290th Infantry Regiment (75th Infantry Division), saw combat in the winter of 1944–45 in the Ardennes. Recalling the freezing conditions in which he fought, Miller recollected:

When we left Rencheux for Vielsalm [January 17, 1945], I had been armed with a submachine gun commonly called a “grease gun” because it superficially resembled an automotive maintenance tool. I would have much preferred to have kept my M1 rifle with which I was

Magazine pouches

Apparently, little thought was given to how troops would carry M3 magazines. Although it is sometimes stated that Thompson SMG three-cell pouches were used, the fit was reportedly tight. No specific M3 magazine pouches were issued to US Army personnel. Most commonly used was what is known as the D90242 Bag, which would allow up to eight magazines to be stuffed inside and carried over the shoulder. It also had wide belt loops so that it could be affixed to the pistol belt, but tankers would normally not have wanted something on their belt that would catch on the various protrusions inside a tank. The bag was issued to tank and some vehicle crews, not to individual soldiers but as part of the

equipment for the tank, as were the M3 SMG and 900 rounds of ammunition in 30-round magazines (Ellis 2013: 27). Many soldiers used a gasmask bag to carry magazines, or stuffed them in their pockets. Another common method was to tape two or three magazines together and just carry the spares so affixed to the magazine in the SMG. However, this increased the possibility of damage to the lips of the magazine and for debris to get into the magazine. Later, magazine covers were developed for use with full magazines to protect the ammunition and the lips. Reportedly, the USMC did issue a three-cell magazine pouch for the M3 during World War II. Later, three-cell pouches in Olive Drab were made during the 1950s and 1960s.



RIGHT An M3A1 SMG along with ammunition and the “Case Ammunition” carrying magazines; this magazine case carries six magazines. Note that this M3A1 has the conical flash hider installed. The weapon appears to have an M1 Carbine sling, which would have been correct on an M3A1. (John Miller)



ABOVE Front and rear views of a Vietnam-era three-pocket magazine pouch for the M3 SMG. (Alamo Military Collectibles)

LEFT Many troops armed with the M3 SMG chose not to use a magazine pouch, but instead to tape multiple magazines together. In this case, in a photograph dated October 16, 1944, a soldier of the 167th Signal Photographic Company has three magazines taped together. Note that the two outer magazines are turned upside down to the magazine in the weapon. (NARA)



proficient but was not given the choice. When we encountered the strong enemy position, my weapon would not fire because of the intense cold and neither would the BARs. Since I had been trained on the BAR, the platoon sergeant instructed me to see if I could get them to operate. I advised the men carrying them to remove the cartridge clips from the weapons, stuff toilet paper into the receiver, and set it on fire. I did likewise with my submachine gun, and thus we succeeded in warming them enough so they started working. The cold affected the M1 rifle as well, but the bolt on the rifle could be closed manually and the weapon fired single shot to warm it. The automatic weapons depended on the speed of the bolt closing to fire them, so it was necessary to warm them. (Quoted in Green & Brown 2010: 256–57)

Private First Class William “Tsak” James served as a runner in the Intelligence and Reconnaissance Platoon of the 394th Infantry Regiment (99th Infantry Division) at the beginning of the German offensive in the Ardennes that came to be known as the Battle of the Bulge. James – a Greek American who changed his surname from Tsakanikas – was renowned as an expert shot, particularly with the M3. He would eventually receive a Distinguished Service Cross for his heroism in combat on December 16, 1944, the first day of the Battle of the Bulge:

The President of the United States of America, authorized by Act of Congress, July 9, 1918, takes pleasure in presenting the Distinguished Service Cross to Corporal [then Private First Class] William James, United States Army, for extraordinary heroism in connection with military operations against an armed enemy while serving with the Intelligence and Reconnaissance Platoon, Headquarters Company, 394th Infantry Regiment, 99th Infantry Division, in action against enemy forces on 16 December 1944, at Lanzerath, Belgium. Following a relentless early morning artillery barrage, Corporal James courageously volunteered to probe the enemy area to gather intelligence information. Returning later to the platoon position, he reported small arms fire nearby. Knowing an enemy attack was imminent, he moved with daring boldness to the most forward foxhole position. Soon, two columns of German paratroopers were sighted marching on the road through Lanzerath about 200 yards from his position. Corporal James fearlessly engaged the enemy with devastating small arms fire inflicting many casualties. Throughout the day, he fired his weapon point-blank at the enemy and helped repel three separate frontal attacks despite being outnumbered fifteen-to-one. On the second attack, Corporal James left his foxhole and boldly manned an exposed .50 caliber machine gun where he increased the hail of fire on the advancing enemy. As the third frontal attack began, he ran in the face of withering fire to a forward foxhole where he placed effective point-blank “grease gun” fire on the enemy. During the fourth and final attack, Corporal James emptied his last rounds of ammunition at the enemy soldiers attacking from the rear. As he prepared to escape from the encirclement, a burst of automatic weapons fire ripped through the right side of his face with the impact



A US patrol of the 63rd Infantry Division in March 1945, along the Siegfried Line near Kleinblittersdorf, Germany; the point man has an M1 Carbine, while the others carry M3 SMGs. While some troops on patrol found the M3 invaluable, others disliked the weapon, as author Dan Shine recalled of his father's wartime experiences during a US attack on January 16, 1945: "Before they had attacked the village of Salmchateau, the soldiers in Shine's squad had traded in their M1 rifles for M3 "Grease Gun" submachine guns which were useful for house-to-house fighting. The Grease Gun was capable of putting a lot of lead into the air, which was also good in times like this. Shine hated the Grease Guns, however, because they had a deadly design flaw. The magazine release stuck out in a bad spot where the soldier often bumped it against his body, dropping the ammunition magazine on the ground at his feet. This left the GI with an empty gun, usually at the worst possible moment. Like right now. At the signal, the three riflemen, along with the rest of the first wave, were up and running, dodging left and right to evade enemy fire. Spaced just six feet apart, they made excellent targets for the Germans above them. Up the steeply sloping ridge ran the three, consumed by the noise and fury of war, and firing their weapons in short bursts as they ran ..." (Shine 1999). (NARA)

slamming him to the bottom of the foxhole where he was captured at gun point. Although seriously wounded, he continued to struggle until he finally passed out from loss of blood. Corporal James' courage and refusal to surrender despite insurmountable odds were responsible for inflicting heavy casualties on the enemy and delaying their advance for nearly 18 hours. Corporal James' intrepid actions, personal bravery and zealous devotion to duty exemplify the highest traditions of the military forces of the United States and reflect great credit upon himself, the 99th Infantry Division, and the United States Army.

Gravely wounded, James was captured along with the rest of the platoon, including its commander, 1st Lieutenant Lyle Bouck. In March 1945, during an operation that became known as the Hammelburg Raid, a task force from the 4th Armored Division sought to free Allied prisoners of war; Bouck was involved in the breakout attempt. He later recalled:

One of the guys gave each of us a grease gun. We were making pretty good progress when the tank in front of us exploded and started to burn. I see that I'm in the middle of a sea of tracer bullets. I'm hit in the left knee. It felt very hot and I couldn't tell whether I could move. [2nd Lieutenant Matthew] Reid [of Company D, 99th Infantry Regiment; another prisoner of war] and I ducked into some small saplings. From there we could see where the stuff was coming from, crew-served weapons. I hollered, "Let's charge 'em," and we did, firing the grease guns. We could see them dropping.

I yelled to the tankers to call the commander and tell him we knocked out the roadblock and he could move around it. We climbed on the last tank and then pulled up in an area where they put out a kind of perimeter defense. We had some wounded and they were all put in a kind of outbuilding made of stone. They put a white flag on the rocks. (Quoted in Astor 2015)

Bouck and those accompanying him were taken prisoner, and he would spend the remaining weeks of the war in captivity; the crucial part his

platoon had played in holding up the German attack on December 16, 1944, would only become apparent after postwar investigation, following which the entire platoon – 18 men – were decorated for their valor.

Others found that the M3 let them down at the critical moment, as Lieutenant James Creighton, executive officer of Company F, 101st Infantry Regiment (26th Infantry Division), discovered on December 29, 1944, during the Ardennes fighting:

Jim Creighton's Fox Company was attacking Café Schumann from "Cemetery Hill," just to its south. Creighton ran forward, clutching a grease gun. It was cocked, the cover down to keep dirt out of the chamber. He turned the corner of the first house.

Ten feet away a German, holding a rifle, was staring at him in wonder. Creighton pulled the trigger on his gun. Nothing happened. The German was also having trouble with his rifle. Both men simultaneously span and ran back where they had come from. (Toland 1959: 314)

Germany, January 1945: members of the 761st Tank Battalion are pictured test-firing their weapons. Note that the tanker in the background has an M1 Carbine that has been cut down so that it would fit in the tank. Anecdotal evidence suggests that the M3 began appearing with tank crews in mid-1944. The stowage illustration for the M4A3E2 Medium Tank shows two M3 SMGs stowed under the radio in the turret. However, the September 1944 M4A3 manual specifies five M3 SMGs: two in the turret and three in the right front spare-parts box in the hull (War Department 1943a). Five M3 SMGs seems to have been standard in "Wet Stowage" M4s – so called because ammunition stowage bins were surrounded by a hollow casing containing a water/glycerin mixture which would help prevent ammunition fires and thus help save the tank. The M26 Heavy Tank, which first saw combat in 1945, had provision for five M3 SMGs, as well as one M2 Carbine and an M8 Grenade Launcher for the M2 Carbine; 900 rounds of .45 ACP were carried for the M3s and the M1911 pistols carried by the crew (Office of the Chief of Ordnance 1945). (NARA)

Vehicle-mounted troops

One group that did seem to prefer the M3 was vehicle-mounted reconnaissance troops, who found that its compactness allowed them to engage an enemy quickly from within a jeep. Others who would normally have been issued a pistol, such as officers or weapons crews, found the M3 more effective than the pistol and would often acquire one, in some cases from a disabled tank. In *162 Days and a Bronze Star*, Dwayne Engle has quite a bit to say about the M3 in use with members of the 10th Armored Division guarding supply routes in their Sherman tanks during World War II:





An M3 along with an array of World War II tanker gear and an M1911 pistol in a shoulder holster. Both the M1911 and M3 were standard weapons among tankers, and both took the .45 ACP cartridge. Some, though, preferred older technology. Ralph Schip of Troop E, 18th Cavalry Reconnaissance Squadron, was a crewmember of an M8 Howitzer Motor Carriage. He served during the Battle of the Bulge, and later recalled: "Our M8 assault guns were veritable mechanized armories, when consideration is given to all the extra armament we managed to acquire by devious means. The assigned equipment consisted of a 75mm howitzer, .50-caliber machine gun, bazooka, rifles, and grenades of all types. In addition to all this, each GI had his own personal preference as to what was needed to do the job at hand. My extra weapon and pride and joy was a Thompson submachine gun, the old "Chicago Typewriter," complete with Cutts-compensator and the whole show – none of those crazy "grease gun" plumbers' friends for me!" (quoted in Green & Brown 2010: 113–14). (Ken Macswan)

At major road intersections, one or more Sherman medium tanks would be positioned to guard the route. Civilian traffic, what little there was, would be stopped, and tank crew members were ordered to inspect drivers, passengers, and vehicles.

The .50 cal anti-aircraft guns on a pedestal mount on top of the turret would be trained on a vehicle undergoing an inspection, while another tank crew member carrying an M3 "Grease Gun" standard to tank crews would carry out the inspection. (Engle 2006: 97–98)

Engle goes on to discuss the M3 in some detail, commenting on it being less expensive to produce than the Thompson and its stamped-metal construction. He particularly comments on the low cyclic rate, allowing an experienced tank crewman to fire a single shot if needed. He also makes reference to the weak bolt spring, which affected reliability, and the slowness of having to open the ejection-port cover to release the safety.

One of the most effective uses of the M3 in combat is cited by William B. Hanford in his book *A Dangerous Assignment*. On December 14, 1944, in heavy fighting against the Germans, a halftrack driver of the African-American 3rd Platoon, C Company, 614th Tank Destroyer Battalion, "surprised from behind by a German infantry squad mowed down eight of his attackers with several blasts from his .45 caliber grease gun" (Hanford 2008: 80).

Walter Powell, who fought with the 6th Armored Division, recalled: "My M3 jammed very easily as the tiniest piece of sand would jam the cylinders. We heard they cost the government about eight bucks apiece" (quoted in McManus 1998: 51).

Russell Spooner, an armorer serving in an infantry replacement company, described his role: "my specific assignment was to see that before he went to the line, every replacement had his proper weapon, that it operated correctly, that he had fired it, if and when that was possible, and that he had his combat load of ammunition" (Spooner 2005: 48).

Spooner had an opportunity to assess the Grease Gun not as part of his infantry duties, but as an armorer working with tank troops:

Members of a tank crew could be issued either a pistol or a submachine gun. Nearly all wanted a pistol, but these were chronically in short supply. I never received more than a tenth of the number ordered. A new submachine gun, the M3, was substituted. This was not a popular choice with the tankers. The old Thompson (the “Chicago typewriter”) was a well made weapon, but apparently too time-consuming and expensive to manufacture in quantity. The M3, with only two machined parts, the bolt and the barrel, was fast and cheap. All the other parts were stamped out of sheet metal.

It fired the same .45-caliber cartridge as the pistol and the Thompson. Everyone called it the “grease gun,” because that’s what it looked like. Target practice on the range proved that it was far from accurate, but that was not a critical necessity. If a tank were knocked out, the crew usually needed to bail out in a hurry. An M3, lifted above the hatch opening, could spray the countryside with a lot of bullets in a matter of seconds. This, it was reasoned, would discourage a nearby enemy from any attempt to interfere with those who needed to abandon their tank. Firepower, rather than aimed fire, was becoming the order of the day. (Spooner 2005: 35–36)

John Nothnagle, who served in the 570th Signal Company (70th Infantry Division) during World War II, used the M3:

I was carrying an M1 when we first went overseas and for awhile after. I never fired my M1 in anger; I just never had a target. Then at one point we were called in and told to turn in our rifles. We were equipped with the M3 submachine gun, the famous grease gun. It was quite heavy, although I’ll say that it wasn’t as cumbersome as the rifle. We’d sling it over our back and it wasn’t too bad. It wasn’t an effective weapon; it was a very slow firing piece compared with other submachine guns. It also had the unfortunate propensity of dropping its magazine when it fired. When you fired it, the motion of the weapon would cause the heavy magazine to drop out. We learned to hold the magazine when we fired so it wouldn’t drop out. We practiced with them after they issued them to us. I only carried two or three magazines for it. I kept one in the gun and kept the others on the truck. The truck was our home. (Quoted in Goodwin 2005: 129)

Nothnagle goes on to relate an occasion when he used his M3 in combat:

I did fire the grease gun once in anger. On that occasion, I had been transferred to a wire section and I was stringing wire in a small village in Lorraine. A sniper took a shot at me from a barn like building across the road, only about 60 feet away. I heard the round pass by my head. I turned around and I knew exactly where he had fired from, there was an upper window. I fired about a 10 to 15 round burst from my grease



gun that shattered the window and window frame. It was a good burst and the magazine held. About two minutes later, the shooter appeared with his hands over his head. It was a kid; he was one of those boys the Germans mustered in towards the end of the war. He wasn't a very good shot and I was happy he wasn't. I took him prisoner. (Quoted in Goodwin 2005: 129–30)

Some interesting points can be taken from Nothnagle's comments. First, it is noteworthy that his rifle was not replaced by the M3 until after January 1945, when his unit was sent to France, as Signal Corps units were among those for which the M3 was intended. His comments about the slow rate of fire are interesting, since he implies this was a disadvantage, whereas many found that they could control bursts more effectively

Prisoners captured by a combination of 6th Armored Division troops and French Resistance fighters near Plouay, France on August 28, 1944, are taken to the POW area for interrogation. The soldier guarding them is armed with an M3 Grease Gun. Arnold Leondar, an MP serving with 726th MP Battalion in December 1944, found himself facing the threat of German attack in the hours following the start of the Battle of the Bulge. His unit, equipped with M1 Carbines, M1911 pistols, and Grease Guns, didn't have any M1 Garand rifles, and Leondar had only two 30-round magazines for his M3 (Dooley 2003: 88). The US MPs held positions alongside French soldiers equipped with antiquated rifles. The French were convinced that the Germans were about to appear, as Leondar recalled: "I didn't believe them ... but I was made apprehensive and tried to talk them into a defense around my subMG and its 60 rounds. I knew it would be a suicide stand, but if they were right, we had to do something ..." In the event the threatened attack didn't materialize: "As I look back now, my 'last stand' would have been foolhardy ... I am glad that we were not tested" (quoted in Dooley 2003: 89). (NARA)

The Battle of the Bulge, December 1944 (overleaf)

Early on Christmas morning 1944, tanks from the US 3rd Armored Division engaged elements of 2. SS-Panzer-Division near Manhay, Belgium. This Sherman M4A1 has been stopped by a hit on its running gear and the tank has come under attack by *Panzergranadiere* of SS-Panzergranadier-Regiment 3. Three crewmembers of the Sherman have bailed out of the tank and are engaging the Germans. The tanker atop the Sherman is using the .50-caliber M2 machine gun to lay down heavy fire; the tanker at left fires his .45-caliber M1911A1 pistol while the one at right engages with his M3 Grease Gun. No spare magazines for the M3 are visible, but the tankers wear the cold-weather tanker coverall, and so the man firing the M3 may have tucked spare magazines into the pockets.





because of this. It is also instructive to note that, though the 70th Infantry Division did not enter combat until February 3, 1945 and only spent 83 days in combat, it suffered a total of 3,966 battle casualties.

Some of the last shots of the war in Europe were fired from M3 SMGs. In May 1945, many prominent prewar French political and military figures were being held at Schloss Itter in the Austrian Tyrol. Deserted by the soldiers who had been guarding them and fearing roving bands of SS troops in the area, the French hostages armed themselves with weapons left in the *Schloss's* arms room and on May 3 sent a messenger to find advancing US troops who could come to the rescue. Three tanks and their crews from the US 12th Armored Division were sent.

First, though, Captain Jack Lee and Corporal “Stinky” Szymczyk, a gunner on Lee’s tank, accompanied Wehrmacht officer “Sepp” Gangl and one of his enlisted men, who had volunteered to find Americans who could rescue the French. In the Germans’ Kübelwagen, the four soldiers now united in one mission carried out a reconnaissance prior to sending more Americans: “As Corporal Keblitsch (the Wehrmacht driver) put the vehicle in motion, the two Americans settled back, their helmets most probably on the floor so as not to attract undue attention and their M3 submachine guns almost certainly lying cocked and ready on their laps” (Harding 2013: 121). The reconnaissance party did not encounter hostile German troops, but did find some bridges that had been wired with explosives. Troops loyal to Gangl removed the explosives, and Gangl formally surrendered the town of Wörgl and its garrison of his troops. Lee allowed the Germans to keep their weapons to help defend the town and the *Schloss*. Local Austrian Resistance members joined with the Germans. Lee met the French VIPs and promised to return with a relief force.

With two Shermans from his own 23rd Tank Battalion and five from the 3rd Platoon, Company B, 753rd Tank Battalion, plus three squads of infantrymen, Lee set out to Schloss Itter. Three of the tanks had to be left behind when a bridge collapsed after the first four had crossed. Two more of the tanks were left, along with some of the US infantrymen, to help defend the town of Wörgl, leaving Lee with his original two tanks. Another of Lee’s tanks was left to guard a bridge that would be needed to evacuate the French. This left Lee with his own tank and four infantrymen to carry out the rescue at the *Schloss*. When they arrived they found a few German troops with Gangl and armed Frenchmen.

Lee deployed the troops as best he could to repel the attack they would likely face. The weapons on the single tank and one .30-caliber machine gun that had been dismounted from the tank and placed atop the *Schloss's* walls were the heaviest weapons available to Lee, but the tank was knocked out early in the attack by Waffen-SS troops of 17. SS-Panzer Grenadier-Division *Götz von Berlichingen*. The US tankers had three M3s and the infantrymen their M1 rifles and a Browning Automatic Rifle. The “tame Germans,” as Lee called them, and the French had MP 40 SMGs and Mauser rifles. Soon, however, ammunition was running low for all of the weapons.

Fortunately, on May 5, just as the Waffen-SS force was preparing for a massive assault, additional American troops and tanks arrived, and the Waffen-SS personnel fled. The former leaders of France had been saved by

9mm Grease Guns

The Office of Strategic Services (OSS) was the primary “customer” for the 9mm conversion of the M3. These conversion units were planned for use during World War II by Resistance groups in both Europe and the Pacific. Reportedly, none were issued to US troops. Since the M3 had originally been designed with easy conversion to 9mm caliber as a requirement, a conversion unit was relatively straightforward to design. The conversion kit consisted of a 9mm barrel, 9mm bolt with recoil springs, magazine adaptor to take Sten magazines, and a Sten magazine. The 9mm bolt for the M3A1 was different to that for the M3, so both types were produced.

Originally, it was planned to produce 25,000 conversion kits, but far fewer were actually made. In December 1943, a recommendation was made to acquire 500 kits. This procurement was authorized in February 1944, with Rock Island Arsenal in Illinois manufacturing the parts, other than the bolts, which were produced by Buffalo Arms – the same contractor that had produced .45 ACP M3 and M3A1 bolts. Sten magazines were acquired from British sources. Reportedly, 50-round Lancaster magazines would also work. Although the 9mm conversion barrel externally appeared similar to the .45 ACP barrel, the chamber portion extended farther from the rear of the barrel nut to allow reliable feeding of the shorter 9mm cartridge. The 9mm bolt face was also set back farther than on the standard bolt (Iannamico 1999: 122–23).

In addition to the conversion units, some sources report that Guide Lamp actually produced around 1,000 guns chambered for the 9mm cartridge. These were marked “U.S. 9 mm S.M.G.” on the left side of the magazine well. “M3” was not in the marking so they are generally referred to as “M3-Type.” Yves Cadiou and Alphonse Richard’s book *Modern Firearms* mentions the presence of these variants in European Resistance museums, but the author has not seen an example of this weapon (Cadiou & Richard 1977: 86).

a few anti-Nazi Wehrmacht soldiers, a handful of US infantrymen, and the crew of an American tank with their M3s (Harding 2013: 121–60).

In the Pacific

Few troops in the Pacific and the China-Burma-India theater appear to have received the Grease Gun. Horace Leach, who served with Merrill’s Marauders in Burma, remembered his M3 vividly: “At about 20 feet I aimed and pulled the trigger; nothing happened. The old grease gun was



A soldier fires the M3 on the range at Camp Landis, Burma, in November 1944; Camp Landis was the base for the Mars Task Forces, which contained the survivors of Merrill’s Marauders. (NARA)



Pictured on Ulithi Atoll, one of these US Marines is armed with an M3 SMG. The atoll was an important forward staging area for the US Navy during World War II. (Tom Laemlein / Armor Plate Press)

jammed with sand. I ... realized that a defective gun probably saved me from taking a direct life in combat" (quoted in McManus 1998: 51).

Roy Dunlap, who served with an ordnance unit in the Pacific, normally had strong opinions about the various small arms he encountered, including the M3:

The "grease-gun," or M3 was a flash in the pan, to the army. Maybe it was more useful in Europe, where it was presumably dropped to underground forces. I have no kick about the cheap appearance of this plumber's delight, or any such

criticism, but I do not see that we gained anything by making it, when we could have copied the Schmeisser and had a better machine pistol, if that was its purpose. Weight unloaded was 8.9 pounds; overall length, stock closed, 22.8"; and stock extended, 29.8".

The basic principle of such a weapon is simplicity, yet in this M3 were incorporated an elaborate cocking mechanism and a cover over the ejection port, acting as a safety also, the excuse being that these points would allow the gun to be kept clean – no dirt would get into the bolt runway. The little guns fired full-auto only, from 350 RPM to 450 RPM. Sights were fixed as on the Thompson M1, and consisted of spot-welded stamped aperture rear and blade front, I believe for 100 yard setting. A 30-round straight magazine was used, not interchangeable with the Thompson. These were strictly point-and-hope guns and were not at all liked in the 1st Cavalry. I thought them unreliable as the cocking mechanism was liable to go out of whack at any time, due to some poor engineering concerning the pawl spring. On the M3 the bolt has no handle, but is cocked by a spring-returned lever or pawl inside the stamped receiver, actuated by a crank on the right side of the gun, forward of the trigger. The arm of course is a blowback and fires from an open bolt, and its safety is a stamping riveted to the ejection port cover which prevents the bolt from moving forward when the cover is down. Cover must be opened manually before firing. (Dunlap 1948: 300)

Dunlap's views on the various World War II firearms are always useful and astute, since he often had responsibility for keeping them operating in combat. His comments also seem to indicate that he did not have experience with the M3A1, which corrected many of the M3's faults he points out. The problems with the weak cocking handle and pawl prompted some armorers to develop a field-expedient fix that entailed removing the cocking handle (which may already have been broken off), cutting a slot in the receiver, and affixing a cocking handle similar to that used on the Sten to the bolt (Ellis 2013: 8).

OPPOSITE Armed with an M3 SMG, this US Marine on Okinawa and his colleagues interrogate a prisoner. (Tom Laemlein / Armor Plate Press)



The M3A1 with stock collapsed and sling fitted. The sling for the M3 was easier to provide, as it was the same one used for the M1 Carbine and, hence, was already in the supply system. In FM 23-41, the proper method for carrying the M3 with sling is addressed: "The submachinegun is carried with the magazine removed and stock telescoped, slung over the right shoulder, muzzle pointing down, with the right hand grasping the sling in front of the armpit (fig. 29). When carried during dismounted marches or during field exercises, the weapon may be slung over either shoulder. When troops are at ease, the submachinegun is kept slung, unless ordered otherwise. When troops are at rest, the submachinegun may be unslung and held in any desired position. In executing the command ATTENTION, the soldier assumes the position of attention and places the submachinegun in the carrying position. Parade rest is executed in the normal manner except that the right hand continues to grip the sling and keeps the gun at sling arms" (US Army 1974). (C&S)

THE GREASE GUN SINCE 1945

Korea

Terry Tennant, who served as a squad leader in a mortar platoon with the 7th Infantry Regiment (3rd Infantry Division) during the Korean War, offers some interesting comments about his use of the M3 in that conflict:

In my squad, the squad leader had an M1, but the rest of the guys had carbines. I think they were M2 carbines, I remember they had the selector switch and they would go full automatic. We started off with the smaller 15-round magazine for them and then we got some that were bigger, about double in size. The guys would tape two or three of them together. I hardly used my M1 because I picked up a .45-caliber grease gun. The 187th Airborne had made a jump out in front of us one time and they lost a whole lot of people. They brought out three jeep trailer loads of weapons and I grabbed one of those grease guns. I took three magazines and taped them together and that's what I carried most of the time. I could hang it around my neck and it didn't bother me. I just left my M1 cradled beside the seat in the three-quarter ton truck most of the time.

I never did use the grease gun in combat. The only time I ever shot at a target and saw somebody fall was with the M1. I was always busy with other jobs so I didn't have much time for shooting. When I was with rifle companies on the OP's [Observation Posts] I had plenty of opportunities, but I would be busy calling for fire. I didn't have a whole lot of time to be drawing a bead and pulling a trigger. (Goodwin 2005: 115-16)





During street fighting in Seoul, South Korea, on September 20, 1950, a US Marine engages the enemy with an M3; note the weapon's distinctive cocking crank. (NARA)

Commanding Company K, 17th Infantry (7th Infantry Division) in Korea during February 1953, Hal Moore – later to achieve prominence for his outstanding leadership in Vietnam – relied on the Grease Gun, as the young captain wrote to his wife:

I have my cooks, drivers, typists – “clerks and jerks” – all formed up as a local reserve as all my platoons are on line. I keep a loaded grease gun [M-3 submachine gun] hanging right by my rack along with three magazines of ammo. I can be out of here and moving within five minutes if any of my people get hit. (Quoted in Guardia 2013)



Royal Marines of Britain's 41 (Independent) Commando served alongside the USMC in Korea and carried the M3 Grease Gun, though many Commandos were not fond of it: “The official submachine gun, which the British disliked, was the M3 .45-caliber ‘Grease Gun,’ similar to the 9mm Sten gun the Commandos originally carried. A number of old 1926 Thompson submachine guns were acquired and used during raids. All officers and noncommissioned officers carried the coveted Colt .45-caliber pistol” (Daugherty 2003: 3). The Commandos had used the Thompson SMG quite effectively in World War II, and many of those serving in Korea would have still held it in great affection for its stopping power and accuracy to 200yd. Of course, the Thompson was heavy, but its ability immediately to put down a charging enemy soldier made the weight easy to tolerate. (NARA)

Laos and Vietnam

Prior to the United States becoming heavily involved in Vietnam, the M3 saw action in various guerrilla wars. One of the earliest Special Forces missions in Southeast Asia, and one of the most successful, was Project White Star in Laos. (Many of the tactics that Special Forces-trained irregulars would later use in Vietnam were honed with the indigenous tribesman of Laos.) Initially, operations in Laos were commanded by Lieutenant Colonel Arthur D. “Bull” Simons, who would later (November 1970) lead the Son Tay Raid to free US prisoners of war. One of the weapons with which the tribesmen were equipped was the M3, which was well-suited to the ambushes they set:

Project White Star began in 1959 as Operation Hotfoot with the deployment of 107 Green Berets of the 77th Special Forces Group (later designated the 7th SFG in May, 1960) under the command of LTC Arthur D. “Bull” Simons. Additional, SF A-Detachments from 1st SFG (A) were sent as White Star grew as a project operating under the guise of MAAG Laos. The purpose of the project was to train the Royal Laotian Army as well as indigenous Kha, Hmong, and Yao tribesmen to raid and ambush the Pathet Lao communist insurgency.



A US Marine assigned to work with Vietnamese Popular Forces carries an M3A1 SMG slung over his shoulder. (Tom Laemlein / Armor Plate Press)



A Marine of the 2nd ROK Marine Brigade armed with an M3 is pictured during Operation *Jefferson*, which ran during January 1–18, 1966. (Tom Laemlein / Armor Plate Press)

Later White Star's mission parameters included operations against the NVA, which was using Laos as a staging and resupply area for its operations in South Vietnam. At the project's height in early 1962, it had reached a total of 433 SF personnel. SF troopers used a variety of weapons in Laos, including M1 and M2 carbines, along with the M3 .45 cal grease gun, and British Sten guns. Heavy weapons consisted of 81 mm mortars (without sights) and 75mm recoilless rifles. White Star proved to be a training ground for what would lie ahead in Vietnam, namely Foreign Internal Defense (FID) and counterinsurgency (COIN). (Blackburn 2013: 34)

Among the weapons issued to US troops in Vietnam was the M3/M3A1 SMG. Many US troops in Vietnam acquired an M3 or M3A1 by

purchasing it or trading for it from South Vietnamese troops, as substantial numbers had been supplied as military aid. Some point men liked to carry the M3A1 on patrol as it could be handled quickly to deliver a lot of rounds if the enemy were encountered. Shotguns were also often used for this same purpose. Randall Elliott, who served with the 101st Airborne Division in Vietnam, recalled:

Here I met an old friend from airborne training days who had earned a reputation as a gun dealer, and he had a World War II grease gun for sale. This was the famous .45 caliber, short-range submachine gun used by Patton's tankers and others. It had few moving parts and really looked like an old-fashioned grease gun for cars, hence its nickname. It was reputed to be a great weapon in the bush: it was short, compact, with a magazine that could hold twenty bullets, and the magazine extended straight down, which helped you hold the weapon. I knew the .45 pistol was excellent as a close range weapon and thought the grease gun would be as good if not better. Both guns used the short but powerful .45 bullet. If someone was hit by a .45, they went down; there was never any doubt. So after some serious bargaining, I traded a CAR-15, a short-stocked Airborne version of the M16, for the grease gun. *What a deal, I've really come off well in this trade.* (Elliott 2014: 190)

Even so, after a hair-raising incident with tracer ammunition, Elliott opted to trade his Grease Gun for a semiautomatic shotgun; he cited poor ammunition availability as a key reason, along with the .45-caliber bullet's "nasty habit of tumbling when fired from an observation helicopter due to their low muzzle velocity" (Elliott 2014: 193). The present author has never heard of this issue from anyone else and has not encountered it when firing the M3. Maybe firing downward affected it, as tumbling occurs as a bullet slows down and the heavier rear of the bullet will tumble over the lighter front of the bullet; however, the stubby .45 ACP bullet would seem to have less of this tendency than some rounds.

Lieutenant Bill Vankat, a platoon commander in the USMC's 3rd Reconnaissance Battalion, went into combat in Vietnam during March and April 1965. In a firefight near Da Nang on April 25, the M3A1 SMGs employed by Vankat's platoon "only kicked up dirt in front of us ... M-14s became our weapon of choice after that" (quoted in Vetter 1996: 11). Even so, the M3A1 proved popular with troops assigned to reconnaissance missions, as it was compact for moving through the jungle and also gave a lot of firepower to hit the enemy hard and then evade. US Army Long Range Reconnaissance Patrols (LRRPs) and USMC Recons often used the M3A1. Many photos of the M3A1s used by recon personnel show them with the conical flash suppressor attached.

To keep the M3s being used in Vietnam running, spare parts were produced during that period. Of special note are the barrels that were chrome-lined for added corrosion resistance in Vietnam's tropical climate (Iannamico 2002). Reportedly, some US Special Forces personnel

Suppressed Grease Guns

The compact size of the M3 combined with its chambering of the subsonic .45 ACP round made it a good candidate for the development of a suppressed version, as a supersonic bullet traveling over about 1,100ft/sec makes a distinctive cracking noise as it breaks the sound barrier. To some extent, the Ordnance Department was influenced by the success of the suppressed version of the Sten used by Britain's Special Operations Executive (SOE) for operations behind enemy lines.

Initial experiments in suppressing the M3 took place at Fort Benning, Georgia, using suppressors fitted with baffles of the type developed by Hiram Maxim. This type of suppressor used curved vanes that caused muzzle gases to spin in small vortices inside the suppressor until they cooled, thus reducing their pressure and dampening the sound. The suppressed M3 was intended for use by Army Rangers and other special-operations personnel. The Maxim suppressor proved heavy, and other than prototype weapons no M3s were produced using it.

The real impetus to produce a suppressed M3 came from the OSS for use by agents and Resistance fighters. Through the Ordnance Department, the OSS contracted Bell Laboratories to develop an effective M3 suppressor. Guide Lamp produced drilled barrels – with 48 .25in holes that would allow gases to escape as the bullet was fired – as well as special barrel nuts. Barrels were threaded for about .5in at the muzzle to allow the barrel nut to act as a seat for the suppressor. Internal parts were to be produced by the High Standard Firearms Company, which would also assemble the suppressors. The contract was for 1,000 suppressors (Iannamico 1999: 106–07).

Two sleeves comprised the suppressor. A rear sleeve formed the expansion chamber, which contained a coil of stainless steel mesh, and was 7.5in long and 1.5in in diameter. The forward sleeve was the actual suppressor housing, which contained 230 steel-mesh discs secured by an end cap, and was 7in long and 1.13in in diameter. A metal connector joined the expansion chamber and the suppressor housing by screwing them together. The connector was then screwed to the barrel at the muzzle to lock the suppressor in place against the barrel nut. One of the most useful features of the M3 suppressor was that the standard M3 barrel could be removed by unscrewing the locking collar, and the suppressed barrel could be quickly screwed on in its place (Iannamico 1999: 107–08).

To describe simply how the M3 suppressor functioned: when the bullet was fired, the gases generated by the propellant escaped through the 48 holes in the barrel. The coil of tin-plated copper mesh in the expansion chamber slowed down the escaping gases to allow the bullet to retain velocity as it passed through and also help cool the gases; as the bullet entered the suppressor housing and passed through the steel-mesh discs, remaining gases were trapped for a short time, then along with the gases from the expansion chamber escaped into the surrounding air. Bell



ABOVE The suppressed M3A1 remained in use with US special-operations forces during the Vietnam War and later. (C&S)

Laboratories estimated that the M3 suppressor was only about 80 percent as effective as that used on the Sten Mk IIS (Iannamico 1999: 108). Based on US Navy tests conducted after World War II, rounds fired from the suppressed M3 developed a muzzle velocity of about 100–125ft/sec less than rounds fired from a non-suppressed M3. In accuracy tests, shooters firing the suppressed M3 shot groups one-half to two-thirds the size of those fired with a non-suppressed M3 (Iannamico 1999: 114–15). Presumably, the reduction in noise and the weight of the suppressed barrel (2.99lb versus 1.33lb for the unsuppressed barrel) helped the shooters to fire more accurately on full-automatic. According to Hobart, a more effective M3 suppressor was built at Britain's Royal Small Arms Factory Enfield, but was not adopted (Hobart 1973: 46).

Members of the US Special Forces used various suppressed SMGs including the Sten Mk IIS, Swedish K, Uzi, and M3. John Plaster comments on the suppressed M3 in use with MACV/SOG:

The suppressed M3 grease gun proved very popular; its powerful 230-grain, .45-caliber slug struck with lethal force, depending upon shot placement. Developed during World War II for the U.S. OSS, this suppressed gun weighed 11.5 pounds, 3 pounds more than a standard M3, which (combined with a slow cyclic rate of 450 rpm) allowed controllable single shots at full auto – and with considerable accuracy. (Plaster 2000: 142)

took the springs from the M2 HB machine gun and cut them down to double the M3A1's cyclic rate, though this field modification damaged the rear of the receiver (Iannamico 2002). As the M3 had a tendency to move to the right during long bursts, increasing the cyclic rate would likely have compounded this tendency and required the shooter to compensate in his stance and firing position.

Roy Jacobson, who served with 5th Special Forces Group in Vietnam during the mid-1960s, had little time for the Grease Gun (or the M16). Stating that "I believe it's important to carry the same weapon and caliber as your troops," he carried the M1 Rifle and then the M1 Carbine, with which "I never had a malfunction." He recalled:

I shot and some carried the M3 grease gun, a fully automatic submachine gun, named because it looked like and was the same size as a mechanic's grease gun. When I held the trigger back on full auto and swung the M3, bullets were one and two meters apart in the sand bank. What a slow cycle. Christ, I'd miss them all. I never fired the Thompson submachine gun that Tom, Reino's replacement carried, but I didn't ever carry the M3 or the Thompson because of their excessive bullet and magazine weight. (Jacobson 2010: 47)

The M3A1 had been widely used by the US Navy's Underwater Demolition Teams (UDTs) and continued in use when the US Navy Sea, Air, and Land Teams (SEALs) were formed in 1962. In *Swimmers Among the Trees*, Joel M. Hutchins discusses why the SEALs liked the M3A1: "Proven reliability was an important criterion in the SEAL's selection of armament. Since U.S. units in the Pacific theater during World War II had enjoyed great success with .45-caliber automatic weapons, such as the M3A1 "Grease Gun" and Thompson M1A1 submachine gun, some SEALs elected to use them as personal weapons ..." (Hutchins 1996: 64). Chief James Watson in *Point Man* gives very perceptive evaluations of weapons used by the US Navy SEALs in Vietnam, including the M3:

Laos, 1969 (opposite)

A Military Assistance Command Vietnam/Studies and Observations Group (MACV/SOG) reconnaissance team has entered Laos to observe movement along the Ho Chi Minh Trail. Lightly armed recon teams normally tried to avoid contact with the enemy; as a result, the SOG team is well hidden. The Viet Cong fighter at right has stepped off the trail to urinate and appears to have spotted the recon team. As a result, the SOG man armed with the suppressed M3A1 SMG is engaging him. Since this will likely alert the other Viet Cong personnel, the recon men armed with the XM177 will be prepared to open up on the other Communists, who are obviously not expecting an attack since they have their weapons slung. If the "Thumper" man with the M79 grenade launcher has canister rounds, he will fire them down the trail to eliminate as many of the enemy as possible. The Viet Cong fighters are armed with various weapons, including a captured CR 39 paratrooper version of the French MAS 36 rifle and a Chicom SKS. Note also that, although MACV/SOG personnel used the suppressed M3A1, they often chose the suppressed Sten or Sterling instead.



But the SEALs were going to be involved in a lot of land combat and guerilla warfare, and the equipment you need for that is a lot different from what we had in UDT.

Most of the time we would get what we wanted. The first weapons that we received were some .45 caliber M3 greasegun submachine guns that the Navy sent us and the AR-15 rifles. The greaseguns we considered too heavy for our purposes, especially the loaded magazines. Though we kept some around, no one I know really wanted the greasegun. The best package of firepower and weight we had was the new AR-15. This was several years before the Army adopted the AR-15 as the M-16. But Roy [H. Boehm, Officer in Charge of SEAL Team Two] had used his open-purchase system and gotten us sixty-six brand-new AR-15s fresh from the Colt factory. (Watson & Dockery 1993: 69)

It should be noted that the AR-15 mentioned by Watson should not be equated with the current AR-15, which is the semiautomatic civilian version of the M16. The AR-15s referred to by Watson were select-fire weapons. Also, it can be surmised that the M3s supplied to the SEALs were left over from the stocks of M3s used by the UDT.

At least some Grease Guns captured by the Viet Cong from Army of the Republic of Vietnam (ARVN) forces were used against US and allied troops in Vietnam. Some Chinese M36 and M37 versions of the M3 also turned up in Vietnam. In *Search and Destroy*, Keith Nolan offers one instance of the M3 being used in combat in Vietnam during 1968 by members of the 1st Cavalry Regiment (Americal Division), near the hamlet of Duc An 1:

The enemy having been boxed in, Captain Kaczor and Alpha Troop rolled over the position, all weapons blazing – “a beautiful textbook attack,” writes Lawrance – whereupon the scouts and infantry dismounted to eliminate the remaining NVA with hand grenades. Lieutenant Jackson fragged a bunker, killing two. The gung-ho West Pointer, who carried an old M3 grease gun, was also credited with mowing down two more North Vietnamese in a trench from his track, for which he would be awarded the Silver Star. (Nolan 2010: 253)

A mention of the “Grease Gun” with tankers in Vietnam occurs in Ralph Zumbro’s *Tank Sergeant*, describing an incident when a Vietnamese on a motorbike tried to run through a Vietnamese National Police checkpoint on a bridge:

Another time our attention was drawn by a rising yammer of voices. We saw a middle-aged man on a motorbike “read out” the policeman who had accosted him, and drive through a choke point. Sanchez reached for a grease gun to fire a warning burst, but a pair of strategically-placed police had the matter in hand. One of them stepped towards the man, causing him to swerve across the road to where another cop stood. The second policeman simply stuck a length of iron pipe in the spokes of the front wheel, and after the crash, he picked up



the would-be escapee and frog-marched him back to the commander.
(Zumbro 1986: 228)

The Grease Gun regularly accompanied tankers on routine operations away from their mounts, such as reconnaissance missions. In Vietnam, Robert Peavey commanded an M48A3 Patton tank known as “Better Living Thru Canister” in Company B, 5th Tank Battalion, USMC. As a corporal, he took part in an aerial reconnaissance flight in May 1968:

I thought I could snap some great photos from the air, so I grabbed my camera, helmet, and flak jacket and headed off to grab the submachine gun we carried inside Better Living Thru Canister. I wasn’t taking any chances in case some mechanical problem caused us to unexpectedly have to set down. I hadn’t been in country long enough to learn that mechanical problems weren’t what I should have been concerned about ...

Embesi and I wore our pistols ... In my hands was our tank’s submachine gun, an example of American firearm design at its worst. Every Marine tank had an M3 “grease gun.” It cost Uncle Sam only \$15 to manufacture, and rumor had it they were really made by Mattel ... (Peavey 2004: 111–12)

USMC Recons used the Grease Gun during the Vietnam War. Here, while the Recon in the foreground sketches an objective, the other one provides cover with his M3 SMG. (USMC)

THE GREASE GUN SINCE VIETNAM

Armor troops

Sometimes accounts of how late the M3A1 was issued are apocryphal, but most put them in use with armor units at least until the First Gulf War (Operation *Desert Storm*) in 1991. Generally, the M3A1 still seems to have been issued with the M60 tank, which remained in service with some US National Guard units until at least 1997. The author has been told by friends that served with armored units in Germany during the 1960s through the 1980s that there were normally two M3A1s in each US tank. When armor units turned in their M60 tanks for M1 Abrams tanks, the M3A1s seem to have been turned in as well. The author has also read comments by crewmembers of the M109 Howitzer to the effect that they still had M3A1 SMGs into at least 2004.

Delta Force

Delta Force initially used the M3A1 as their SMG, the weapon's low cyclic rate allowing ease of control and good shot placement. An additional aid to controlling the M3 is its straight-line design that delivers recoil directly to the shoulder and retards muzzle rise on full-automatic fire. Reportedly, too, it was felt that a .45 ACP round would be less likely to over-penetrate than a 9×19mm round. Suppressed M3s were also used. Even after Delta Force began to switch to the Heckler & Koch MP5, some M3s were still used. In *Delta Force*, Charlie Beckwith described the weapons to be used for the Iranian hostage rescue mission in April 1980:

We had to accommodate this new situation [a rescue in a hostile country]. Delta continued to be the only team for the job, but it must now adjust. Snipers were converted to machine gunners. Delta's room-clearers selected as their weapon the Heckler and Koch MP5 9mm parabellum submachine gun. Both the Brits and the Germans use it. It feels good in your hand. It is smaller and lighter than the Thompson, and it can be used with a silencer. Other operators used the CAR15 and a few carried .45 grease guns (M3A1s) or M16s. (Beckwith & Knox 1983: 178)

Colonel Beckwith does not specify why some M3s were taken. Possibly, the greater stopping power of a .45 ACP round in a suppressed weapon was considered desirable, or it may just have been personal preference on the part of some operators. Eric Haney also comments on the M3 in his book *Inside Delta Force*:

The principal tools of the Delta Force assault team member are pistols and submachine guns. Initially, both of our short guns fired the same round: .45-caliber automatic pistol.

Our submachine gun was the old World War II-era M3 grease gun we'd used in selection. We used that model instead of a more modern design because Colonel Beckwith had snagged a warehouse full of them free from the CIA, and Charlie never could pass up a good deal.

OPPOSITE During REFORGER (REturn of FORces to GERmany) '85, a tanker of Company C, 5th Battalion, 77th Armor Regiment, guards his M60A3 Main Battle Tank with his M3A1 SMG. (NARA)



These members of Philippine Marine special-operations forces include one man (in the left foreground) armed with an M3. As a US ally, the armed forces of the Philippines had received M3 “Grease Guns,” which remained in the armory of the Philippine Marines. When the need arose for an SMG to arm boarding parties, N-11, the Philippine Navy’s Office for Weapons, Information Systems, and Communications, arranged for the release of hundreds of M3 and M3A1 SMGs instead of purchasing new weapons. With certain modifications, the M3 was also deemed a suitable weapon for the Philippine Marines Special Operations Platoon. Upgrades by Marine Corps armorers included the addition of a weaver mount with a Simmons red-dot optical sight, a new camouflage paint job, a sling, and a suppressor. A locally developed suppressor was chosen and the first of the upgraded M3s was tested at the Fort Bonifacio Naval Station in May 2004. These upgraded M3s are designated “M3 SpecOps Generation 2.” What is interesting – given that the upgrading of the M3s was intended to cut costs – is that the cost of the upgrade proved to be about the same as the cost of a new .45-caliber HK UMP SMG. Reportedly, some of the M3/M3A1s were nickel-plated for use by guards at the Philippine Naval Headquarters. (US Navy)



One of our guys complained about having to take so many of them, but Beckwith retorted, “You ain’t got to feed ’em, and you don’t have to shovel crap out from under ’em, so what are you complaining about?”

With practice, the grease gun is an easy weapon to use. Even given its poor sights and limited range, its .45-caliber round gives it pretty impressive power. Within a year, we adopted the German-made Heckler & Koch model MP5 to replace it, but we kept a few grease guns around to use as silenced weapons. It was unsurpassed in that mode. The round is subsonic, so it doesn’t give off a crack as it passes through the air, but it’s heavy enough to retain a lot of energy and killing power. (Haney 2002: 130)

An interesting note on the M3A1s used by Delta Force is that they were fitted with thumb safeties. Reportedly, the thumb safety was developed by FBI armorers when the M3A1 was issued to FBI SWAT teams and was later adopted by Delta Force.

LAW-ENFORCEMENT USE

The Grease Gun entered the arsenals of many US law-enforcement agencies in the years following World War II. Legendary Texas Ranger Joaquin Jackson recalled a fellow officer, Captain Alfred Allee, using the Grease Gun in a particularly dangerous situation during a shootout at the Carrizo Springs jail:

Tol Dawson and I, guns cocked and loaded, assumed that as younger men we would be the most likely candidates to storm the second floor. We took one step toward the stairs, when our sixty-four-year-old captain grabbed our arms and jerked us back.



“None of my Rangers are gonna get killed in front of me!” he said. He paused long enough to snatch Deputy Barrow’s World War II-era .45 caliber submachine gun, nicknamed a “grease gun” by the marines who carried it in combat. In an instant, he checked to make sure the weapon had a full magazine, cocked the action, took a breath, shoved his cigar to the opposite side of his mouth, and charged screaming up the stairs, gun blazing. We were so awestruck that for a moment we didn’t think to follow.

The jailhouse was primarily constructed of concrete and steel. The grease gun spit out 230-grain full-metal-jacketed bullets as fast as the action could slap them into the chamber. The jail was engulfed in a storm of fire, lightning ricochets, and booming thunder. The floor trembled. There was nothing for any sensible man to do but to duck and cover as the bullets ricocheted off the gray walls.

After a few anxious seconds, I heard Captain Allee’s voice. “All clear!” he yelled. “Come on up.” (Jackson & Wilkinson 2005)

During August 1949, an M3 SMG is demonstrated to members of the California Highway Patrol at Fort Ord, California. (NARA)



IMPACT

A long-lived SMG

THE “GREASE GUN” AND ITS COMPARATORS

To help put the M3 in the context of its times, it is worthwhile to look at how it compared with its principal rivals, developed around the time of World War II. As with the other SMGs under consideration here, the M3 was designed to be produced inexpensively using stampings. The .45 ACP round employed by the M3 was readily available since the M1911 pistol and Thompson SMG used the same cartridge.

The German MP 40 chambers the 9×19mm Parabellum, the same caliber as used in the Walther P 38 and Luger P 08 semiautomatic pistols widely employed by the German armed forces. Though fabricated from stampings, the MP 40 seems more finished than the other SMGs produced in the same way; some would attribute this to German craftsmanship.

The British Sten also employs the 9×19mm Parabellum cartridge; this allowed for the use of captured German ammunition – especially useful when these weapons were dropped to Resistance fighters. The Sten was made in various “Marks” – Mk I to Mk V (the Mk IV was experimental only) – with each later one normally incorporating improvements. As with the MP 40, the Sten was produced from stampings.

Designated the L2A1, the British Sterling is also a 9×19mm Parabellum weapon; it was intended to replace the Sten, though it was not immediately adopted owing to the large numbers of Stens in service.

The Soviet PPS-43 is chambered for the 7.62×25mm Tokarev round rather than the 9×19mm Parabellum. Since this was the same cartridge used in the Tokarev pistol and the PPSH-41 SMG, logistics were well served by this chambering. As with the Sten, the PPS-43 was designed for simplified and inexpensive production at a time when the Soviet Union was fighting German invaders. It also used stampings for as many parts as possible to eliminate machining operations.

Preparing to fire

Ribbing on the front of the MP 40's magazine well allowed a rest for the support hand while firing, though many soldiers grasped the magazine instead and used it as a vertical foregrip, thus adversely affecting magazine retention and reliability. The MP 40's folding stock was well designed for use by German airborne or armored troops as it lowered the overall length to 24.8in with stock folded. It is not especially comfortable, but more so than some of the other SMGs discussed here. One disadvantage of MP 40s that had seen a lot of service was that the stock became loose and wobbly from constant folding and unfolding. The MP 40's bolt projects far enough that it allows ease of cocking.

With the Sterling, untrained troops had a tendency to grab the magazine with the support hand, but the proper technique is to grasp the ventilated barrel shroud. The Sterling's under-folding stock is more comfortable than that of the Sten. Once deployed, the stock offers a solid shoulder rest, but the struts can impact the cheek when firing on full-automatic. Owing to the bolt handle being angled upward, the Sterling allows cocking with either hand – a definite advantage. One of the Sterling's improvements over the Sten is a removable trigger guard to allow firing while wearing winter gloves.

The proper technique for firing the PPS-43 is to grip the front of the magazine well – not the magazine – with the support hand. The disadvantage here is that care must be taken that the bolt handle, which reciprocates with the bolt, does not strike the hand. The PPS-43's bolt handle is also smooth, thus allowing the hand to slip off it when cocking it. The stock folds over the top rather than the bottom of the weapon and, as with other all-steel stocks, is uncomfortable in cold or hot temperatures and can cause discomfort during full-automatic firing. The stock has a tendency to become wobbly with wear, making it harder to shoot accurately and also creating noise when moving in combat. The PPS-43's magazine release is actually rather good, as it is protected from being depressed inadvertently and is easy to operate, even with gloves – an important consideration for a Soviet weapon. A trigger guard that is large enough for a gloved finger is another plus for winter warfare.



A US Navy SEAL armed with an M3A1 moves forward during stealth assault training in the early 1970s. It is interesting that he is not using a suppressed SMG, as the SEALs often used suppressed weapons. (Tom Laemlein / Armor Plate Press)

Here, a US sergeant carries a Sten Mk II while supervising German prisoners near Übach, Germany, in December 1944. One plus for the Sten Mk I was that it had a wooden handguard and vertical foregrip that made control when firing easier. Normally, on the Mk II and Mk III, the support (left) hand grasped the barrel shroud/sleeve, which necessitated care that the hand was clear of the ejection port and did not stray in front of the muzzle. The Sten Mk V's front and rear pistol grips made it much easier to control when firing; however, the front pistol grip was declared obsolete in June 1945. Originally, the Sten had a tubular stock, but this was changed to the Mk II T-stock and later the loop stock. Finally, the Sten Mk V had a wooden stock; by far the most comfortable for shooting. (The author has always found the T-stock especially uncomfortable to fire, though it is probably the most recognizable Sten stock.) On the Sten Mk I, the cocking handle was rotated down into the safety slot, but this was changed on the Sten Mk II so that the cocking handle was rotated upward. This made operation of the cocking handle with the left hand much easier. The author's experience is that this change allows the cocking handle to be slapped out of the slot much faster, to bring the weapon into action. The Sten Mk II's shorter cocking handle also made it handier for stowage. A desirable feature of the Sten Mk V was a cocking handle that could be locked forward on an empty chamber by pushing in. (Tom Laemlein / Armor Plate Press)

As with other SMGs mentioned here, there is a tendency to grab the M3's magazine and use it as a foregrip. This is not sound practice. The front of the M3's magazine well is actually well designed for grasping by the support hand and even incorporates finger molding. The M3 wire stock is not especially comfortable, but neither are those on most of the other mass-production SMGs under consideration. M3 stocks are notoriously prone to wobble, which makes accurate shooting difficult. Another problem with M3 stocks is that if pulled back quickly and rigorously, the stock can come completely out of the receiver. The M3 has a crank-style cocking handle that is prone to breakage. This handle was eliminated on the M3A1, which is cocked using a cutout in the bolt. Neither is as effective as the cocking handles used on the other weapons under discussion here.

Accuracy and firepower

The Sten's sights are at their best at 50yd or less, where the front triangle sight may be picked up adequately by the rear peep. A cross-bolt selector allows the Sten to be fired on full- or semiautomatic. The Sten uses a magazine copied from the German MP 28 SMG, the theory being that captured magazines could be used. As with the MP 40, however, the double-column, single-feed design is problematical. The Sten's magazine is side-mounted, which actually improves reliability slightly as the spring does not have to push the weight of 30 cartridges upward.

The Sterling's sights are durable and usable; both front and rear sights are protected by ears, and a flip-up two-position rear peep sight allows relatively accurate shooting to 200yd. The Sterling's 550rds/min cyclic rate allows firing of one or two shots when set on full-automatic. One of the Sterling's most important improvements over the Sten is in the magazine, which incorporates a pair of rollers and ribs to strengthen the curved sides, thus greatly increasing reliability; it is still inserted from the side. Four ribs machined into the Sterling's bolt also enhance reliability by





This US driver carries an MP 40 somewhere in Germany, 1945. The MP 40's sights are usable, consisting of a U-shaped notch, which can be set for 100m (109yd) or 200m (219yd), and a hooded front blade. The magazine is one of the real weaknesses of the MP 40. It holds 32 rounds but uses a double-column, single-feed system, which adversely affects reliability, especially when dirt or debris gets into the magazine – a common occurrence in combat. When used in conjunction with sound magazines, the MP 40 has a good reputation for reliability. (Tom Laemlein / Armor Plate Press)

allowing fouling to be pushed out through openings in the receiver.

The PPS-43's sights are rudimentary but serviceable, consisting of a front post with protective ears and a rear flip-up with notches for 100m (109yd) and 200m (219yd). A blowback design that fires from an open bolt, the PPS-43 can only be fired on full-automatic. The magazine holds 35 rounds; and a chromed bore makes the weapon's barrel resistant to the effects of firing corrosive ammunition.

The M3's .45 ACP cartridge gives it substantially more stopping power than the 9×19mm Parabellum or the 7.62×25mm Tokarev. However, the M3's range is not as great as with those cartridges due to the .45 ACP's heavier bullet and lower muzzle velocity. Also, it cannot penetrate heavy clothing or equipment as effectively. The 7.62×25mm Tokarev round is known especially for its penetrative qualities.



During 1963, Montagnard commandos being trained by US Special Forces fire M3 SMGs on the range. The M3's sights are usable, though maybe not quite as effective as those on some of the other SMGs mentioned here. Consisting of a front ramp and rear peep, the sights are usable to 50–75yd in my experience, though others may be able to shoot better with them. Others of the rival SMGs offer the choice of 100m or 200m peep sights, which permits some adjustment for distance. The M3 is a full-automatic weapon without a semiautomatic setting, but it has such a low cyclic rate (450rds/min) that it is easy to fire a single shot or a two-shot burst through trigger control. It uses a 30-round detachable box magazine, which normally functions reliably, though the fact that it is double-column to single-feed can cause problems – but this is also true of the MP 40 and Sten. Magazine capacity on the other SMGs is between 32 and 35 rounds; a few more than the M3 but not enough to be considered a major advantage. (NARA)

Safety considerations

The MP 40's safety consists only of two notches in the receiver into which the bolt head can be pushed to lock it to the rear or forward, but for practical purposes, locking the bolt forward on an empty chamber proves most efficient. The user can then just rack the bolt back to prepare for firing. When fired a lot on full-automatic, however, the MP 40 is known for getting very hot and hard to grip.

A major problem with the Sten Mk I is the safety, which consists of a slot that engages the bolt when it is to the rear. However, if the bolt is in a closed position on an empty chamber, a sharp impact against the butt can cause the bolt to jump back and fire. Many injuries occurred as a result. One useful improvement to the Sten Mk III is the incorporation of a finger-guard which prevents the shooter's finger from entering the ejection port. Safety was always an issue with the Sten, but in combat that is the case with all weapons should troops get sloppy in handling.

One of the major improvements of the Sterling over the Sten is the incorporation of a selector in the grip, which allows the weapon to be put on safe. With the Sterling, a separate firing pin that is prevented from impacting the cartridge's primer until the cartridge is fully seated enhanced safety.

The PPS-43 incorporates a lever safety that locks the bolt. As a result, it is safer than the SMGs already discussed that use a notch in the receiver as a safety. The PPS-43's perforated sheet-metal handguard helps dissipate heat and also incorporates a crude muzzle brake consisting of a U-shaped piece of steel to divert gases to the side. The PPS-43 heats up quickly in full-automatic fire, however, so care must also be taken that the support hand does not get burned.

An M3A1 SMG with the bolt cocked and the dust cover/safety open. The Grease Gun's safety is surer than those that entail rotating the bolt head into a slot, but can be slow to operate. This safety is actually the dust cover, which is rotated down so that a stud can engage a notch in the bolt, holding it forward on an empty chamber or to the rear. This system is relatively easy to engage, but it takes practice to flip the dust cover up quickly prior to engagement. If the weapon is dropped with the dust cover open, the cover can be bent, rendering it unusable as a safety. In fact, steel in the receiver is thin enough that if the weapon is dropped it can be dented enough to render the Grease Gun inoperable. The safety/selectors on the Sterling and PPS-43 are definitely more soldier-friendly. Jim Kendall, who served in the 384th Field Artillery Battalion (103rd Infantry Division) in Europe in 1944–45, found the M3's rudimentary safety required care in use: "The grease gun was kind of hairy to operate. The only safety was the cover that was over the firing chamber. Once you opened that cover it was ready to fire and you had to be careful. The rate of fire was very slow, but they worked all right. I shot at a strafing fighter plane with the grease gun one time. I know I didn't have any chance of hitting it, but it made me feel good to shoot" (quoted in Goodwin 2005: 200). (C&S)



Handiness in the field

The MP 40 only offered full-automatic fire, so the user needed to practice trigger control to fire more accurate short bursts. The front of the magazine well offered a good gripping point for the support hand, which aided in control. Also aiding control was the comfortable pistol grip. Overall, the MP 40 feels light and handy when in use. However, the folding stock was not especially comfortable and tended to rattle, which made stealthy movement more difficult. Although the MP 40 had a bolt lock, it did not have a safety; as a result, it would normally be carried with a loaded magazine and bolt forward on an empty chamber, thus requiring the bolt to be pulled back prior to firing.

The most effective way to carry the Sten was with the bolt down on an empty chamber rather than with the safety on. The user's hand could grip the Sten in such a way that the bolt handle was precluded from coming back accidentally and discharging, though care would have to be taken not to drop the weapon. The bolt handle would be quickly pulled back to ready the weapon to fire.

The Sten Mk I's magazine was likely to catch on protrusions within vehicles or aircraft or when moving through heavy undergrowth. The Sten Mk II was easier to disassemble for airborne troops or for dropping to Resistance fighters, and the magazine well could be rotated to decrease the width. Rotating the magazine well also covered the action, thus keeping out dust or other debris. The Sten's magazines were extremely difficult to load, requiring the use of a loading tool to load them fully; and it was always advisable to make sure any magazines carried would function.

Like the Sten, the Sterling used magazines that extended to the side, thus allowing easier use of the weapon from the prone position. However, by protruding to the side the magazine was much more likely to catch on limbs, vehicle doors, etc. Conversely, on the MP 40, PPS-43, and M3, the magazine protruding from the bottom of the SMG made shooting from the prone position more difficult.

The M3's operating system incorporated a bolt that was drilled to support two guide rods that offered clearance for accumulated dust, debris, mud, etc. while continuing to fire. This design contributed to the M3's excellent reliability. The M3's magazine was very hard to load, however, and this was addressed by incorporating a loading tool into the M3A1 stock. The M3's magazine well was not flared to allow rapid loading; hence carrying out a reload in combat, especially at night, could be more time consuming than would be preferable. The M3's magazine-release button could be operated with the left hand while pulling an empty magazine free. At best, the M3 could be reloaded about as quickly as some of the other SMGs discussed.

Testing Communist SMGs in Korea. This US soldier fires the PPS-43, while a PPSH-41 lies on the table. One disadvantage to use of the PPS-43 is its all-steel construction, which in cold weather (as in the Soviet Union) makes it uncomfortable to grasp or rest against the cheek. The folding stock is uncomfortable when firing and has a release button that can be hard to depress. The stock also becomes loose and rattles after substantial firing. One positive feature for cold-weather use is the large magazine-release lever. The best place to grasp the PPS-43 with the support hand is the front of the magazine well, but care must be taken that the bolt handle does not hit the hand as it cycles. The bolt handle is also smooth, making it easy for it to slip from the hand when pulling it back quickly. One real positive is that the PPS-43 is very reliable, as is typical of Russian weapons. (Author)



The author with the semiautomatic carbine version of the Sterling. The suppressed version of the Sterling, the L34A1, became the standard for Western special units for many years until the advent of the HK MP5SD. For special-operations personnel, there were suppressed versions of the Sten – most were Mk II (S) versions, the “S” standing for suppressed – many of which remained in use until at least the 1960s or 1970s. One advantage of the M3 is that there is an effective suppressed version, though it is very heavy and unwieldy. There seems to have been little interest in suppressing the MP 40 or the PPS-43, though I gather that the Germans did experiment with suppressing the MP40. In both cases, the weapon fires from an open bolt, which makes them more difficult to suppress – but so do the Sten, Sterling, and M3, all of which were produced in suppressed versions. (Author)



The author's experience

In the author's view, the MP 40 balances better and handles better than most of its SMG contemporaries. Conversely, the Sten must be appreciated in the context of its time, for it was developed when Britain was short of weapons and faced the real possibility of invasion. Time and resources simply did not allow the development of a sophisticated weapon. Getting lots of SMGs into the hands of British troops and Home Guard forces to kill Germans was the priority, and the Sten fulfilled this requirement well.

The Sterling is accurate for an SMG and quite reliable. I have also fired the suppressed Sterling enough to rate it as the best suppressed SMG I had used prior to the HK MP5SD, though it is heavy and ungainly. I also find the Sterling's folding stock sturdier and more solid than the other folding or collapsing stocks assessed here. The biggest disadvantage of the Sterling is the protruding magazine, which increases the likelihood of snagging.

My experience with the PPS-43 is that the combination of the high-velocity 7.62×25mm round and the muzzle brake makes for a very loud report when firing the weapon. As is typical of Soviet weapons, the PPS-43 is crude in appearance but functions reliably.



At 8.2lb empty, the M3 is at least 1lb or more heavier than the Sten, Sterling, or PPS-43, but it is lighter than the MP 40. Fully loaded with .45 ACP ammunition, the M3 feels even heavier. I've always found, though, that it is relatively well balanced and tolerable to shoot and to carry

slung. Some of the M3's competitors have features that were considered more desirable, but none is markedly superior overall. The best is the Sterling, based on the author's first-hand experience, but for US troops the 9mm chambering would have been considered a negative, as they were attuned to using the .45 ACP for SMGs.

TECHNICAL INFLUENCE

It could be argued that the greatest influence of the M3 within the US armed forces was its staying power. Because the M3 fulfilled the need for an SMG for approximately 50 years, there was really very little demand for the United States to develop a new SMG. In fact, when the US armed forces did adopt a replacement SMG, it was the German-designed HK MP5. Continued use of the .45 ACP round in post-1945 SMG designs certainly owed something to the influence of the M3, which had continued the use of that chambering from the Thompson SMG.

Another factor in the M3's longevity has to be the US Armed Forces' search for an "everything" rifle. The M14 was touted as the replacement for the infantry rifle, carbine, squad automatic weapon, and SMG. Given the M14's size, however, it was unlikely to supplant the SMG. The M16, especially in CAR-15 configuration, did replace the SMG to some extent, but certainly not completely. In actuality, the mid-1980s adoption of the Beretta M9 pistol probably had more to do with the replacement of the M3 SMG, as replacement of the M1911 pistol meant that the M3 remained the only weapon chambered for the .45 ACP cartridge on regular issuance, though the Mk 23 Mod 0 .45-caliber pistol was on limited issue in the special-operations community and the USMC continued to issue the MEUSOC pistol in .45 ACP.



A .380 ACP (9x17mm) MAC-11 SMG at left showing its compact size compared to the 9x19mm MAC-10 at right. Weighing 6.3lb empty, the MAC-10 is 10.6in long with stock collapsed and 21.6in with stock extended; the equivalent figures for the MAC-11 are 3.5lb, 8.7in, and 18.1in. As with the M3 and M3A1, the MAC-10 is built primarily from stampings. To keep the weapon compact, it uses a telescoping bolt that wraps around the barrel. To save on production stages, the feed ramp is part of the trigger guard. The MAC-10 was also produced in .45 ACP caliber, thus allowing M3 magazines to be used in the .45 ACP MAC-10. Although the MAC-10 is often shown in action films being fired one-handed, its high cyclic rate (1,090rds/min in .45 ACP and 1,250rds/min in 9mm) makes it almost impossible to control when fired in this manner. Cyclic rate of the MAC-11 in .380 ACP was 1,380rds/min. In US special operations and clandestine agency use the MAC-10 was often fitted with a Sionics suppressor. Note that the barrel is pre-threaded for a suppressor. One advantage of the suppressed version is that with a Nomex cover, it could be grasped to help control the weapon more effectively. (C&S)



A member of the 1st Air Cavalry Division at An Khe in 1967 extends the stock on an XM177 Colt carbine. Although the XM177 was not as compact as the M3A1, it took the 5.56×45mm cartridge and the same magazine as the M16. (Tom Laemlein / Armor Plate Press)

The 9mm Colt SMG with an Aimpoint optical sight; note also that the magazine well remains the same size as for the .223 Colt Commando. The Colt SMG has received substantial orders from US agencies that want to purchase a US-made SMG. Principal federal law-enforcement users include the Drug Enforcement Administration (DEA), US Marshals, and the Department of State Security. Many of the DEA Colts are equipped with suppressors so that muzzle flash will not ignite chemical fumes during raids on drug laboratories. There have been few, if any, foreign military or law-enforcement orders for the Colt SMG. (Author)

US successors

There were some other designs used by US military personnel in limited numbers, such as those from Gordon Ingram, especially the MAC-10, which showed some M3 influence in that it was produced from stampings and was chambered for the .45 ACP round. It could also be argued that the Smith & Wesson Model 76 SMG, which was tested by the US Navy during the Vietnam War, owed at least some of its design to the M3, including its sheet-metal stampings, tubular receiver, and a barrel that was readily removable for maintenance. In actuality, however, the S&W Model 76 owed more to the Swedish Carl Gustav SMG.

The 9×19mm Colt SMG was developed in 1982 as an offshoot of the M16, at least partly to offer US law-enforcement agencies a US-produced 9mm SMG so that they could buy domestically. Rather than using the direct-impingement gas system of the M16, the Colt SMG fired from a closed bolt but was blowback-operated. The closed-bolt system enhanced accuracy and made the SMG more competitive with the HK MP5 SMG, which also fired from a closed bolt. The 10.5in barrel kept the Colt compact, as did its collapsible buttstock. Overall length with stock collapsed was 25.6in. The M16-sized magazine well was adapted to take 9mm magazines based on those of the Uzi SMG, and versions of the Colt with safe/semi/full-automatic or safe/semi/three-round burst selectors have been produced. Rate of fire on full-automatic is 700–1,000rds/min. While the 9mm Colt SMG has seen some use with US law-enforcement agencies, military sales were primarily of the .223 Colt Commando, this being a short version (11.5in barrel) chambered for the 5.56×45mm NATO round.



Foreign copies and versions

Far more direct influences can be seen in copies of the M3/M3A1 produced by other countries. One of these copies, which was actually used against US troops in combat, was the Chinese Type 36. Nationalist Chinese forces had first received US M3 SMGs as part of the Lend-Lease Program. After World War II, the Nationalist Government began manufacturing M3A1 SMGs in 1947 – the 36th year since the establishment of the Republic of China, hence, Type 36. Manufactured at the Shenyang Arsenal near Mukden, the Type 36 was very similar to the US M3A1, except that the barrel did not have flats to allow use of a wrench for easy removal, there was no oil bottle in the pistol grip, and there were Chinese markings. Most parts of the Type 36 are not interchangeable with those of an M3A1. Estimates are that fewer than 10,000 Type 36 SMGs were produced before the fall of mainland China to the Communists in 1949 (Iannamico 2012: 58).

While the Type 36 retained the .45 ACP chambering of the M3A1, the Type 37 was produced in 9×19mm caliber. As the 9mm parts were similar to those used in the 9mm conversion units produced for the M3, it is possible to speculate that one or more of the conversion units made for the OSS had ended up in Nationalist Chinese hands. The Type 37 was manufactured at the 60th Jinling Arsenal near Nanking, the Nationalist capital city (Iannamico 2012: 58). When the Communists took the mainland, much of the tooling for the Type 36 and Type 37 was taken to Formosa with the Nationalist forces. Manufacture of the Type 37 continued there as the Type 39 (Iannamico 2012: 58). Some M3s, M3A1s, Type 36s, and Type 37s were captured by the Communists and used against US troops in Korea, French troops in Indochina, and US troops in Vietnam.

Argentina produced its own version of the M3A1 on license during the 1950s and began production in 1955. Unlike the US M3A1, the Argentine versions – the PAM 1 and PAM 2 – were chambered for the 9×19mm cartridge. Thinner-gauge steel was used in the PAM 1 and due to the 9×19mm chambering, it was slightly smaller than the M3A1. Overheating was a problem due to the thinner steel, and it was difficult to control due to its having a higher cyclic rate. The PAM 2 was introduced in 1963 as an improved version of the PAM 1. Among other changes was the inclusion of a grip safety. Between 1955 and 1972, when production ceased, over 47,000 PAM 1s and PAM 2s were produced.

Though an improved Argentine SMG design, the FMK-3, was introduced in 1974, the PAM 1 and PAM 2 remained in use during the Falklands War of 1982. In fact, a good example of a captured PAM 2 is in the Imperial War Museum's collection. In his article "Argentine Guns in the Falklands," Philip St. John Blake mentions encountering the PAM 2 in the Falklands: "NCO's at platoon level are normally armed with the Argentine-made PA3 submachine gun. The PA3, similar to the Israeli Uzi, replaces the PA2, which is a slightly modified U.S. M3 'Grease Gun.' Both the PA3 and the earlier PA2 were encountered in the Falklands in considerable number" (St. John Blake 1983: 11). Surprisingly, though, the Argentines did not seem to use a suppressed version of the PAM 2 in the Falklands. Instead, they relied on the L34A1 – the same suppressed weapon used by their British counterparts (Morgan 2010: 98).

The Vigneron

An interesting derivative of the M3 is the Belgian Vigneron SMG. As Belgium rebuilt its arms industry after World War II, Fabrique Nationale produced the new FN FAL and the classic FN P35 for the Belgian Army. However, the Belgian Army also wanted an SMG that would serve as a personal weapon for armored crews, artillerymen, and other support troops, as well as airborne troops. The Vigneron was adopted by the Belgian armed forces in 1953 and built by Société Anonyme Précision Liégeoise in Herstal, though the state arsenal at Rocourt near Liège supplied many of the components. Another company, Ateliers de Fabrications et Métalliques (AFEM), located near Brussels, also seems to have produced some parts. The plastic pistol grip was produced by the Compagnie de Manufacture Herstal (Heidler 2013: 102). The Vigneron was produced in two models: the M1, which was only produced until 1954, by which time 21,300 had been produced; and the M2, which was produced from 1954 onward. Differences between the two designs are slight. On the M2 a front-sight protector was added, a rear-sight notch was used instead of a peep sight, and the spring for the dust cover was strengthened. Heidler speculates that as many as 150,000 Vignerons were produced (Heidler 2013: 107). (International Military Antiques, Inc. IMA-USA.com)

A new design that owed much to the M3 and the German MP 40 was developed by Georges Vigneron, a Belgian reserve military police colonel. Among the features drawn from the M3 were its tubular stamped-metal receiver and the blowback action. The 9x19mm-caliber Vigneron SMG also used a hinged dust cover over the ejection port. The wire stock also shows the influence of the M3, and, as with the M3, it may be used for cleaning the weapon. Other influences included a bolt similar to that of the Sten, a magazine similar to that of the MP 40, and a compensated barrel with cooling cuts similar to that of the Thompson SMG. According to Heidler, these ribs were later abandoned to speed production (Heidler 2013: 102).

Unlike the M3, the Vigneron has a selector switch with positions for safe, single-shot, and full-automatic. A pistol-grip safety locks the bolt in the rear or forward position and must be depressed before the weapon can be fired. As mentioned, the magazine was very similar to that of the MP 40; in fact, 32-round MP 40 magazines could be used, which was a useful way of saving money since many captured MP 40 magazines were available. Also similar to the MP 40 is the use of a cap nut to attach the barrel to the receiver. This system has a flaw, however, in that it allows the barrel to be installed rotated 180 degrees with the front sight facing downward. Though it would seem obvious that the user would notice this, there is a photo of an IRA member firing his Vigneron in the air with the barrel rotated (Heidler 2013: 102). A magazine loader similar to that used with the Sten gun was supplied with the Vigneron, the cyclic rate of which was 620rds/min (Eger 2013).

Belgian military and police forces continued to use the Vigneron until the 1990s. It primarily saw combat in the Belgian colonial wars in Africa during the 1960s and 1970s, but has also turned up in other trouble-spots, reportedly including Vietnam, Northern Ireland, and the Balkans (Eger 2013). Many Vignerons supplied to Belgian forces in the Congo were left in the hands of the Congolese when the Belgians left. This led to the most infamous use of the weapon when the independent Congo's first prime minister, Patrice Lumumba, was executed in January 1961 by a Katangese firing squad armed with Vignerons (Heidler 2013: 107).





CONCLUSION

It would be difficult to believe when the M3 was adopted late in 1942 that the sheet-metal SMG would still be in service a half-century later. Various factors affected that longevity. A major consideration is that the US armed forces have not traditionally been enamored of the SMG, the popularity of the Thompson aside. Personnel issued the M3 were generally not considered front-line combat troops unless they were airborne, Ranger, or special-operations troops. The M3 was considered good enough to give truck-drivers, tankers, and technicians something with which to defend themselves; and since, generally, those were the same personnel likely to be issued a .45-caliber pistol, the fact the M3 used the same ammunition made it more desirable. The compact size of the M3 with stock collapsed allowed it to be readily stowed in tanks or kept close at hand to the driver of a truck or halftrack. If actually needed for combat, a carbine or rifle would be more effective, but such weapons would also be harder to carry close at hand and to access.

It is also instructive to look at the reaction to the M3 SMG among troops to whom it was issued. Initially, many disliked it because it wasn't the Thompson. However, despite some initial problems, the M3 gained its adherents. For some, its handiness won them over, but for others, the effectiveness of its .45 ACP man-stopping round and the control granted by its low cyclic rate made them believers when they used it in combat. Those who were actually trained with the M3 and learned to fire it properly from the shoulder and using the sights were often quite impressed with how well they could control bursts and how accurate it was at 25yd. A friend of the author's who is a licensed dealer in machine guns has mentioned having a display of weapons at major militaria and gun shows or reunions of armored units and being impressed with the number of veterans who stop by to see and hold an M3 or M3A1 SMG. Many express great affection for the "Greaser" and reminisce about the days when it was their personal weapon, signed out either to them or to their vehicle.

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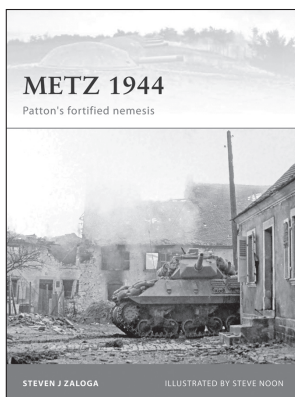
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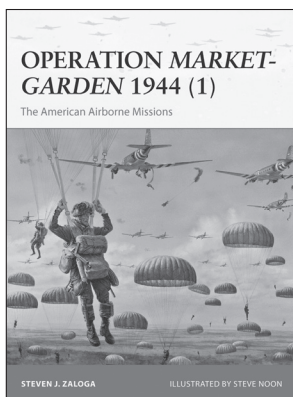
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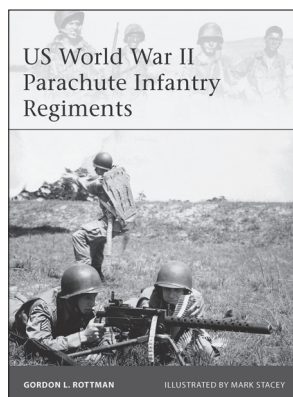
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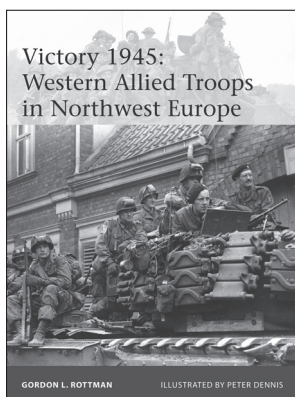
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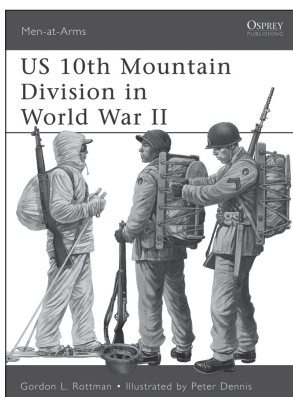
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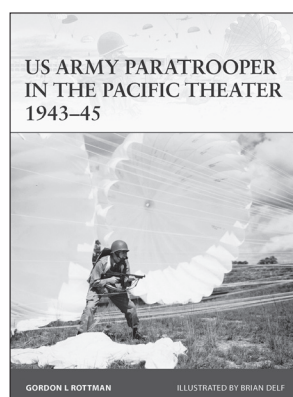
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